

COMPUTERWORLD

Wanted: PowerPC software

IBM, other vendors to deliver hardware this fall

PowerPC rollout

These upcoming events look to shape PowerPC's future from the IBM side of the industry

August	AIX 4.1 to ship
August	IBM to sign contract with Totally NonTechnical Solutions to provide a voice-capable layer in OS/2 for PowerPC
September	Zenith Data Systems, Motorola to announce PowerPC systems
October	IBM to announce hardware
Year's end	Apple/IBM/Motorola PowerPC Reference Platform (Prep) standard negotiations to be completed

By Ed Scannell and Michael Fitzgerald

As IBM and other vendors edge closer to releasing their first PowerPC hardware and operating systems, one might ask: Why should customers care?

Robust hardware and operating system software may be important components, but applications are why users buy boxes. Yet the upcoming hardware and compliant operating systems will have few 32-bit applications ready to take full advantage of the PowerPC.

"The core of [our buying decisions] is we have to buy a machine that will run the software that's

PowerPC, page 101

Net management rift grows wider

By Elisabeth Horwitt and Steve Moore

Hewlett-Packard Co. and IBM are expected in the next few weeks to begin the long-awaited rollout of their distributed network management platforms. But users would much rather the vendors take that step together — as originally expected — than separately.

Indeed, there is an increasing number of incompatibilities be-

tween the products of the two leading enterprise management providers, once partners and now fierce competitors. That estrangement is effectively blockading the industry's efforts to provide commonality and interoperability across multivendor management platforms, analysts and users complained last week.

While users want a selection of the best network management

Net management, page 16

IBM and HP plan to mesh their offerings via DCE and CORBA standards, but products still seem to be years away.



IBM eases host move

By Craig Stedman

IBM this fall will introduce low-end versions of its CMOS-based System/390 machines that can run older releases of the MVS operating system and other mainframe software, according to sources familiar with the company's plans.

The move will allow users to start migrating from traditional mainframes to the less expensive parallel CMOS machines without

the pain and expense of upgrading their software.

"Right now, I can't see a way of [moving to the parallel hardware] unless I rip out everything that I've got," said Larry Duntz, assistant manager of computer services at Beech Aircraft Corp. in Wichita, Kan. "I'm looking for a way to get there so I can evolve."

The ability to run older software will banish an initial requirement

IBM, page 16

Agents spy Internet data

By Mitch Betts
LANGLEY, VA.

After decades of viewing public information as practically useless, U.S. intelligence agencies are planning to exploit the wild and ultrapublic Internet in search of cheap but useful nuggets of information.

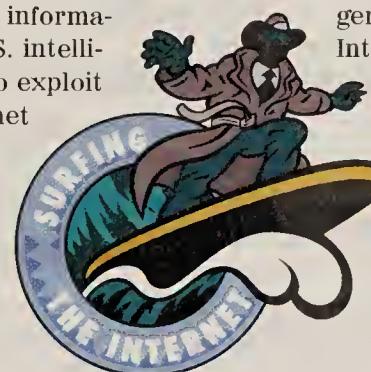
By summer's end, the Central Intelligence Agency and five other intelligence units will hook up to the Internet to collect and share "open-source," or unclassified, infor-

mation, CIA official Joseph Markowitz confirmed.

The six-node Internet link will give intelligence analysts "an access point to the Internet at large," including access to electronic mail by subject-matter experts across the globe, Markowitz said in a recent interview. He is director of the CIA's Community Open Source Program Office, which opened March 1.

The Internet will be a gateway to commercial on-line information

Agents, page 101



MULTIMEDIA COMES DOWN TO EARTH

DESPITE HIGH START-UP COSTS AND COMPLEX SYSTEM DEMANDS, THIS ONCE-HYPED TECHNOLOGY IS LANDING SQUARELY IN CORPORATE IS. OUR CW GUIDE TO MULTIMEDIA, INCLUDING A 200-USER SURVEY ON THE LATEST AUTHORIZING TOOLS, STARTS ON PAGE 67.



Graphical interfaces GUIs still a sticky issue

By William Brandel and Lynda Radosevich

Listening to users discuss the merits of graphical user interfaces these days is like listening to parents weigh the educational value of a Super Nintendo game. It may be highly visual, slick and colorful, but is it really good for you?

If last week's Windows World in Chicago is any indicator, new graphical operating systems and applications will continue to be pitched as more intuitive solutions. However, the complexities of a growing number of features — which GUIs are supposed to mask — still far out-

strip gains in ease of use.

Moreover, with new renditions of "intuitive" software, such as the new GUI in Microsoft Corp.'s Chicago, vendors break the consistency of look-and-feel features that graphical environments once promised.

For information systems managers, all of this ultimately means greater expense. Just as they

dished out training dollars to move from DOS to Windows, they must now prepare to fork over more training money to move to Chicago, the next major upgrade of Windows.

GUIs, page 20



MANAGEMENT

Pay-per-performance schemes can be a good way to bolster quality and attune employees to corporate business goals. But knowing how to best carry out those schemes isn't always easy. As **Community Mutual CIO Bill Eager** knows, IS managers who want to avoid the pitfalls have to know how to pay the game.

See
page

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NEWS

■ A Tennessee software engineer thinks he's found a way to use his title and remain on the right side of the law. *Page 24*

■ Sun Microsystems is not about to rest on the success of its workstations. New strategic arenas for Sun include imaging and multimedia for both the corporate and home markets, according to CEO and President Scott McNealy. *Page 28*

■ Last week's personal communications services bidding was still going hot and heavy as of press time, auguring higher prices and limited competition for narrow-band services including two-way and acknowledgment paging. *Page 14*

COMPUTER INDUSTRY

■ Seagate acquires Palindrome, third in a series of software acquisitions. *Page 32*

DESKTOP COMPUTING

■ Users are saving money while hardware vendors are trying to outdo one another with service and support options. *Page 39*

■ The Rite Aid drugstore chain is putting the finishing touches on a 2,700-store Unix machine rollout. *Page 41*

WORKGROUP COMPUTING

■ More vendors are offering LAN management outsourcing, but customers are still concerned with security and costs. *Page 43*

ENTERPRISE NETWORKING

■ Cabletron and Cisco are offering free technical support to woo customers away from Wellfleet and SynOptics, but some users are still on the fence. *Page 49*

■ Want to get connected? Check out this Internet column. *Page 49*

■ The Automobile Association of America is driving down the frame-relay path to connect its offices around the country and provide better service to its members. *Page 50*

LARGE SYSTEMS

■ An atmospheric research center tried virtually every supercomputer under the sun before it made a decision. *Page 55*

Executive Briefing

Network management is heating up with products, vendor wars and standards efforts. IBM and Hewlett-Packard are on the verge of announcing distributed versions of their now-separate products—solving some problems while creating others. *Page 1*. Meanwhile, after languishing for years as a network operating system also-ran, **Banyan** seems on the verge of taking the lion's share of the enterprise network services market. *Page 12*

On the network standards front, the Desktop Management Task Force is expected this week to release some specifications for remote configuration and management of desktop systems; a new version of the Internet Protocol leaves customers wondering if the transition will be worthwhile; and McAfee Associates pushes its interfaces as industry standards. *Pages 8, 12 and 44*

Digital's negative financials have little impact on customers, some of whom are still content with the balance sheet and others of whom are more concerned about what Digital will sell in the future. For now, Digital is hawking its new high-end workstations. *Pages 8 and 44*

As IBM consolidates its PC Co., Dell prepares to reenter the notebook market. *Pages 4 and 6*

Apple users gear up for PowerPC versions of Excel and Word as networking incompatibilities surface between 68000-based Macintoshes and PowerPC-based Macintoshes. *Pages 6 and 15*

Microsoft users expect business as usual, legal experts explain why the Department of Justice did not go after a stronger case, and IBM prepares to take full advantage. *Pages 10 and 39*

At the Object World trade show last week, IBM previewed development tools. Other vendors demonstrated interoperability between the OLE and CORBA object models as well as a distributed version of OLE. *Pages 14 and 59*

Oracle customers got a chance to lob questions at some of the major application tools vendors last week as they took a look at a bridge that spans the relational and object worlds. *Pages 20 and 55*

Even though client/server is one of the hottest markets around, its tool vendors are having major growing pains as they transition their wares to better serve corporate customers. *Page 32*

The 5th Wave by Rich Tennant



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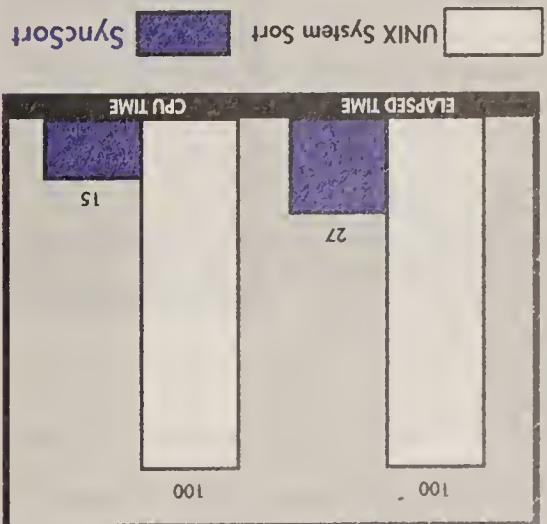
THE UNIX SYSTEM SORT



UNIX has its advantages, but its System Sort isn't one of them. All it can do is sort ASCII text - slowly! SyncSort provides the performance and functionality you need to make your commercial applications work.

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Selection	NO	Reporting	NO	User Defined	NO
YES	YES	YES	YES	EBCDIC	YES
Standard ASCII	YES	Summarization	NO	Multi-byte	NO
YES	YES	YES	NO	SyncSort	YES

FUNCTIONS



PERFORMANCE

IBM cuts PC force, kills Ambra Corp.

By Jaikumar Vijayan

In a move anticipated for some time but still surprising in its scope, IBM announced it will reduce the head count of its IBM PC Co. by 2,000 and relocate employees from nine different sites to Raleigh, N.C.

At the same time, IBM also announced it will permanently close Ambra Corp. in the next 90 days. Current Ambra customers will receive support from the PC Co.

IBM's reorganization, which also affects its Power Personal Systems division, merges the PC Co.'s seven development and brand marketing organizations into four product categories. It also consolidates most manufacturing, development and marketing operations into the Raleigh location.

Eases state of confusion

For users who often complained about a confusing overabundance of similar desktop products from the PC Co., IBM's efforts could result in clearer choices and more reliable product availability and support, analysts and users said.

"To the average buyer, IBM's product lineup often tends to get confusing," said Robert Haas, MIS manager at Intereo, Inc. in St. Louis. However, this problem is not unique to IBM, he

added. For Haas, a former all-IBM user and a recent Compaq Computer Corp. convert, pricing and support were more crucial in his decision to switch.

"The fact is, IBM simply overchoiced its customers and is now trying to apply the KISS [Keep it simple, stupid] approach to their PC business," said consultant Sam Albert, president of Sam Albert Associates in Scarsdale, N.Y.

IBM's effort to slim down and streamline PC operations comes at a time when its PC sales have slipped to third in the industry. Some observers view the move as an overdue step toward recovering some of the turf IBM recently lost to Compaq and Apple Computer, Inc., at least in the U.S. While IBM's PC sales were lower than its sales during the same period last year, both Apple and Compaq have increased their market share, according to figures from International Data Corp. (IDC) in Framingham, Mass. (see story below).

"Compaq has taken the initiative by keeping its eye on the ball. People see IBM flailing about and have begun to put trust in companies like Compaq," said Jennifer Munson, a research analyst at WorkGroup Technologies, Inc. in Hampton, N.H.

Adding to IBM's woes is its \$600 million inventory pileup, which has clogged the channel with thousands of

ValuePoint systems that the company is now trying to auction. Some observers say the recent inventory backup could accelerate IBM's efforts to fill a major portion of its orders through build-to-order manufacturing.

Criticized in the past for its excessively fragmented PC operations, IBM will centralize worldwide manufacturing, development, procurement and customer fulfillment at its facilities in Research Triangle Park, N.C. Similarly, IBM will move its Power Personal Consumer development teams from Lexington, Ky., Kingston, N.Y., and Boca Raton, Fla., to North Carolina.

The consolidation is expected to eliminate 1,500 to 2,000 jobs, primarily at the PC Co., in the next 45 days, according to a memo from Richard Thoman, a senior vice president and group executive at IBM.

"It was a tough decision for IBM to make, [but] it should have been made a long time ago. It was essential," said Richard Zwetchkenbaum, an analyst at IDC. Zwetchkenbaum said the reorganization will allow IBM to knit a stronger and tighter PC operation.

"Things were far too fragmented at IBM, and branding was way out of whack," Zwetchkenbaum said. He said IBM's PS/1 operation has marketing people in Atlantic City, development teams in Lexington and brand management teams in Somers, N.Y.

Reorg ramifications

IBM's reorganization will affect the PC Co. and the Power Personal Systems divisions to varying degrees. The highlights of the reorganization include the following:

- In addition to one current general manager, three new general managers will oversee and coordinate worldwide development and brand marketing of four distinct product categories: desktop, server, mobile and aftermarket/services.
- IBM's Research Triangle Park, N.C., facility will become the North American development and brand marketing headquarters. Research Triangle Park will become home to almost all development, manufacturing and marketing operations of the PC Co.
- The bulk of the PC Co.'s consolidation, which involves product development moving from Boca Raton, Fla.; Boulder, Colo.; Atlanta; Kingston, N.Y.; and Lexington, Ky., to RTP, will be complete this year. Procurement operations for the PC Co. in Boca Raton and East Fishkill, N.Y., will move next year.
- The majority of Power Personal Systems' product development will remain in Austin, Texas, and Boca Raton.

Oracle to test single-user database

By Kim S. Nash

Two firsts are brewing at Oracle Corp.

With a tardy nod to the popularity of desktop databases, Oracle plans this year to ship a version of the Oracle 7 database for Microsoft Corp.'s Windows 3.1 environment, an Oracle manager said last week. Separately, Oracle's so-called Project X single-user database and graphical development tool kit is due to start beta testing in late September, another company insider said.

Most notable about Project X, users and analysts said, is that it builds on Microsoft's Visual Basic scripting language instead of foisting its own on developers. Moreover, unlike client server tools rivals such as Powersoft Corp. and Gupta Corp., Project X will not require users to learn a proprietary programming language.

"That's pretty forward-thinking," said Nicole Roth, an analyst at International Data Corp. in Framingham, Mass.

The new products would plug some gaping holes in Oracle's low-end line,

which has been a trouble spot for users who have longed for Oracle to support Windows PCs.

"It's nice that Oracle is acknowledging PCs more. They haven't been strong there," said Rita Palanov, vice president of the Northern California Oracle Users Group.

Oracle 7 for Windows recently went into beta testing, said Keith Majkut, senior member of the technical staff at Oracle, during an on-line CompuServe, Inc. conference last week. The product is also a 32-bit database and therefore runs under the Win32s application programming interface.

Some users wondered whether the pairing of a full-function Oracle 7 and Windows is just too fat.

Oracle is a memory hog and must be slimmed down if the database is to run on low-end, Intel Corp.-based hardware, some users said. "I tried using a past version of Oracle on PCs and couldn't run any other applications when I had the database up," said Kandice Samuelson, MIS manager at Intercraft Co. in Taylor, Texas.

"I can't imagine squashing down all of [Oracle's] overhead to fit on a PC," Samuelson said, adding that Intercraft recently bought Microsoft's Access for PC database applications.

The product "does have a 'healthy' memory requirement," Majkut said. Oracle 7 on Windows requires 16M bytes of memory, including the Oracle PL/SQL language. Without PL/SQL, 8M bytes are needed. The PC database also demands 30M to 50M bytes of disk space and at least a 486-based PC.

Potential danger

Meanwhile, conflicting reports have surfaced regarding the fate of Project X even before it sees daylight. If Oracle follows through on implied threats to take over Gupta, Project X could be in danger. As one Oracle employee put it, Project X "is a skunk-works effort. The investment ... isn't so much that if [Oracle] got something that does the same thing, they couldn't yank it."

But Marc Benioff, vice president of Oracle's client/server systems division, maintained that a Gupta acquisition would not impact the product. Rather, Project X "is aimed directly at Microsoft, [and] there is little overlap with Gupta tools," Benioff said.

HP tool aids Oracle 7 users. See page 55.



Compaq holds No. 1 spot over IBM, Apple

By Jaikumar Vijayan

For the second straight quarter, Compaq Computer Corp. outstripped IBM PC Co. in unit shipments of PCs, according to figures from International Data Corp. (IDC) in Framingham, Mass. Compaq sold 1.5 million PCs worldwide in the second quarter, followed by IBM with 900,000 and Apple Computer, Inc. with 850,000.

In the U.S., Compaq's 585,000 units led Apple's 465,000 and pushed IBM—with 390,000—to third place, IDC said.

In the same quarter a year ago, IBM led Apple and Compaq with 890,000 units. Compaq appears to be the biggest gainer since then, according to IDC figures. The Houston vendor, which was third in PC sales last year, has emerged on top of the desktop market.

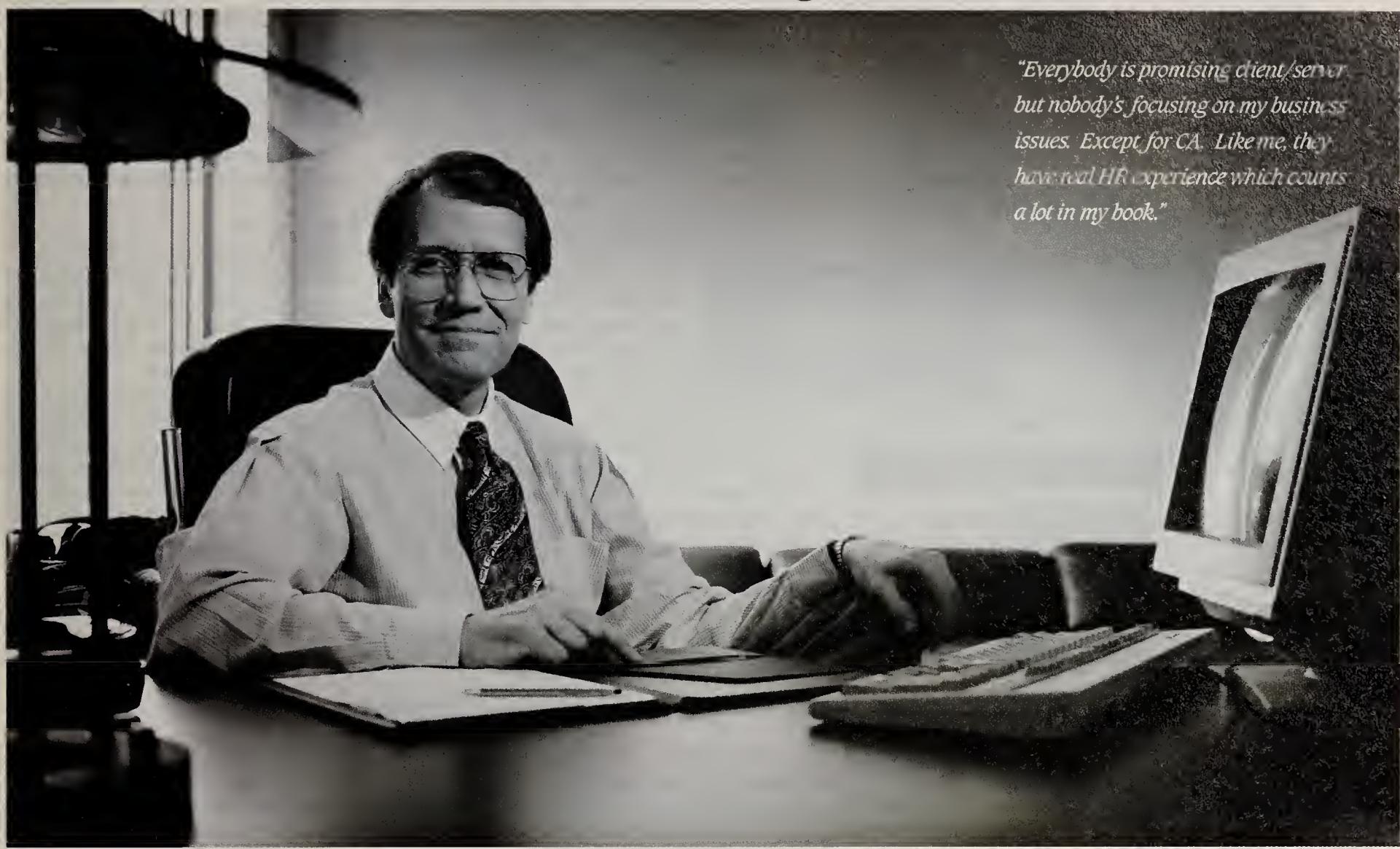
Eyes on the prize

Compaq's performance in the first half of the year puts it on course to wrest desktop market leadership away from IBM by year's end, according to Richard Zwetchkenbaum, an analyst at IDC.

"Compaq is just confirming what it said it would be doing," he said.

Early figures from IDC indicate that another company setting a blistering pace for the first half of the year was Acer America Corp., which had projected sales of 92,000 units — up 92% from the same period last year.

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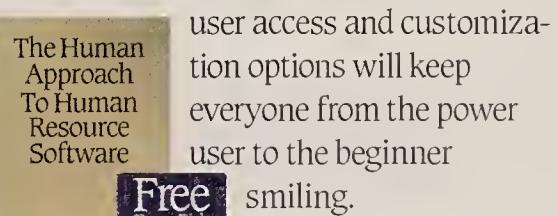
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The danger of crying wolf

Microsoft's critics cried wolf and called in the government too soon. Now they reap the reward of a toothless settlement, and a powerful federal agency backs away from the scene.

The desktop behemoth has certainly shown a persistent knack for adroit, marginally anticompetitive practices. But Microsoft could have been counted on to overstep the rules — if left to its own devices a little longer.

But no. Its competitors, filled with anxiety, turned to the Justice Department and ultimately failed to produce the body of evidence showing that Microsoft got to its near-monopoly position in desktop operating systems through chicanery.

What Microsoft did was produce PC DOS at the behest of IBM; it then worked on OS/2 when IBM said it wanted to address the high end of the desktop market. IBM claims there was trickery, since Microsoft, after many months work, shifted its public emphasis to Windows. But that charge has always sounded hollow to me.

Microsoft left IBM a larger opening to take ownership of and sell OS/2 than IBM left many smaller firms over the years as it codeveloped products in their areas. As a young company, Microsoft deserved credit for standing alongside the computer giant and refusing to be overshadowed by it.

Microsoft chose to sell Windows over OS/2 because of its savvy insight into the nature of the desktop end user. It charged low prices and sold millions of copies. It didn't merely exploit the desktop revolution; it poured system software on it like fuel and then fanned the flames.

At the same time, Microsoft published the details of its operating systems and cranked out waves of languages and tools for developers: Microsoft Basic, C, C++, Visual Basic, Visual C. Legions of programmers began looking to it for leadership — a business asset that could only accrue to a company that had come to be identified as the eye of the desktop revolution storm. And that's what has brought Microsoft to its current, dangerous position.

It stands astride the system software field looking hungrily at its neighbors' turf in applications and networking. With its system software dominance, it possesses an unparalleled opportunity to gain in those areas. Technically, it can hide advantages in its operating systems on behalf of both its applications and networking. Financially, its huge operating system revenue base sustains price-slashing on individual products in other areas.

In effect, this is the subterranean "bundling" issue of the 1990s that the Justice Department was unable to address.

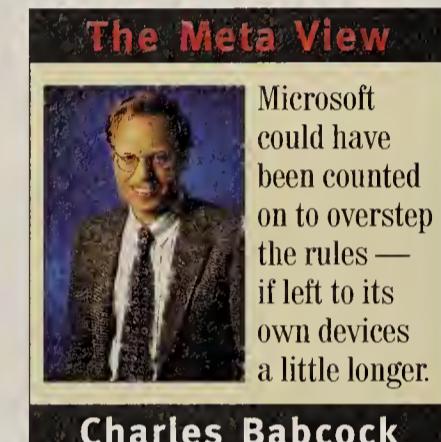
Microsoft's competitors are now sure that it will press its advantage. After all, it did so when it had the opportunity to purchase the Fox Software clone of dBase after it was cleared of legal difficulties. And it did so with an early release of a bargain-basement Access database before Borland could upgrade Paradox. Both moves were major blows to Borland, and it has yet to recover.

Microsoft also pressed its advantage in 1990 when Lotus and WordPerfect thought they were committed, along with Microsoft, to developing applications for OS/2. Microsoft shifted its focus and gained the upper hand in early Windows applications.

But so far, there is little evidence that Microsoft has done anything but take the lead through sharp, legal business practices.

At times one wonders why Lotus, Novell and WordPerfect didn't complain less and concentrate more on their own Windows applications.

Nevertheless, Microsoft's advantage remains. It will almost certainly manifest itself in future competitive moves. When it does, its competitors will once again cry wolf. And then the Justice Department will have to demand a body of evidence that really includes a few bodies.



Charles Babcock

Microsoft could have been counted on to overstep the rules — if left to its own devices a little longer.

Apple compatibility concerns accompany users to MacWorld

By Mark Halper

As Apple Computer, Inc. users head to the MacWorld Expo in Boston this week, they will have a number of networking and cross-platform challenges on their minds.

In the near term, users will leave behind shops where they are on the lookout for creeping incompatibilities that have surfaced between networked 68000-based Macintoshes and PowerPC-based Macintoshes.

An Apple spokesman said the two machines use different packet technology for sending data over Apple's LocalTalk network, and this has caused network slowdowns in some isolated cases.

Apple is providing network system installer software as a solution to the problem, the spokesman said.

Tip of the iceberg

Valerie Takumoto, a technical staff member at The Aerospace Corp. in El Segundo, Calif., gave a more severe account.

"They're only isolated cases because they haven't sold enough Power Macs yet," she said. "And it's not a performance slowdown; the system freezes."

The Aerospace Corp. has about 2,000 Macintoshes with several enclaves of LocalTalk networks tied into an Ethernet backbone. The en-

claves can not talk locally through LocalTalk if even one Power Macintosh is used, Takumoto said.

"If they add one Power Mac, we have to put them on Ethernet whether they want to or not, and all their traffic comes with it," she said.

The Top 10

Broader, long-term networking concerns are also very much on the minds of corporate Macintosh users, according to a list of "Top 10 Issues" published last week by the MacIS user group in Mason, Ohio.

The list showed that more than anything else, corporate Apple users are eager to see Apple deliver on promises to more fully embrace the TCP/IP and IPX network protocols that drive Unix and Novell, Inc. networks.

"My goal for the Power Mac is I want to have three environments running simultaneously — Macintosh, Windows and Unix," said Dave Lustig, manager of network services at Bose Corp. in Framingham, Mass.

Still, Apple has taken large steps toward addressing users' networking concerns this year by implementing TCP/IP support in its new System 7.5 operating system. The vendor has also committed to supporting NetWare on Apple servers once Novell releases its 4.1.1 version of NetWare.

What you need

The Top 3 needs of Macintosh users, according to MacIS, are better networking with other environments through operating system enhancements, improved support for Windows and emulation for Chicago when it is available and enhanced network security and administration.

Dell reenters notebook fray

Intel-powered high-end line slated to ship next week

By Michael Fitzgerald

Dell Computer Corp. will return to the notebook market in a big way next week when it introduces what sources called a fairly strong high-end line.

The Latitude XP line of three new models will top out with a system based on Intel Corp.'s 66/100-MHz DX4 chip, a lithium ion battery and hardware-accelerated, local-bus graphics, the sources said. Other systems will use Intel's 25/75-MHz DX4 and 25/50-MHz I486DX2.

Dell will also round out its AST Research, Inc.-supplied midrange Latitude product line. The Latitude XP line was designed by Dell but manufactured by Sony Corp., sources said.

A Dell spokesman declined to comment on the Aug. 8 announcement.

Users said Dell had not entirely missed the market, despite its previous stumbles.

"I would guess they'll be so careful to come out with something that's good they'll be a good candidate to look at," said Leonard Steinbach, vice president of information technology at the

National League for Nursing, Inc. in New York.

"There's room for them to play in the market," said Ted Julian, an analyst at International Data Corp. in Framingham, Mass. "There's a lot of brand loyalty out there for them. They also have done a nice job of technology differentiation, such as the lithium ion battery."

Come together

The Latitude XP launch should tighten the relationship between Dell and AST, sources said. Dell currently sells a relabeled AST notebook and now will share technology development and customer information with AST.

low-end 33-MHz 486SX-based model with a monochrome screen.

All the notebooks except the DX4/100-based model will ship when announced. The DX4/100 system will not ship until September. Pricing was not available.

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News Shorts

Upgraded IBM AIX ready to roll

IBM last week announced an Aug. 12 shipping date for AIX 4.1, the first major revision of the operating system since its 1990 debut. The release will include a built-in Common Desktop Environment, a user-friendly desktop "dashboard," installation features that reduce setup time and multithreading for IBM's forthcoming symmetrical multiprocesing Unix servers. IBM also cut pricing on AIX Version 3.2.5 by at least 40% on server licenses for groups of 64 users or more.

Thinking Machines in search of cash

Thinking Machines Corp., a pioneer of massively parallel processing, said it is running out of money and needs to find an investor or a buyer. Executives were meeting last week to try to keep the company afloat while negotiating possible deals with Sun Microsystems, Inc. and AT&T Corp., sources said.

Message management moves forward

The Electronic Messaging Association (EMA) is making progress in addressing message management and file attachment issues. At its recent quarterly meeting, the EMA merged its user-driven message management committee with a vendor effort driven by Microsoft Corp. The resulting group plans to offer specifications in October. Also, a dozen major vendors agreed to begin immediate testing of Body Part 15, the X.400 file transfer protocol that lets disparate systems send and receive attached files.

HP to announce updated palmtop

Hewlett-Packard Co. is introducing its 200LX palmtop today. The 200LX will ship with Lotus Development Corp.'s 1-2-3 spreadsheet and Pocket Quicken, a specialized version of Quicken, Inc.'s best-selling personal finance software, as well as Traveling Software, Inc.'s LapLink Remote Access. The 200LX replaces the 100LX in the market and will cost \$549 with 1M byte of flash memory or \$699 with 2M bytes.

AT&T to offer NT management software

AT&T today will announce its StarSentry Network and Systems Management software for Microsoft's Windows NT. The system comprises a base system for NT server management from Network Managers, Inc., an AT&T Server Manager for local and remote monitoring of System 3000 servers and Microsoft's Systems Management Server for software management and remote desktop administration.

SHORT TAKES Computer Associates International, Inc. filed a lawsuit last week against Baan International B.V. charging the Netherlands-based manufacturing software developer with breach of contract. The lawsuit involves an agreement between Baan and The ASK Group, Inc. . . . Under terms of a settlement with the Federal Trade Commission, Adobe Systems, Inc. and Aldus Corp. have agreed to sell Aldus' Free-Hand illustration software. . . . Novell, Inc. made an equity investment in Integrated Systems, Inc. and is licensing its Flexos real-time embedded operating system to the Santa Clara, Calif., firm. . . . IBM announced it will close its Kingston, N.Y., mainframe plant by the end of next year, transferring operations and 1,500 employees to a similar facility in Poughkeepsie, N.Y. . . . Carnival Corp. in Miami inked a \$30 million contract with AT&T for 800 network services last week. . . . MCI Communications Corp. and BT received regulatory approval last week from the European Commission for BT's \$4.3 billion, 20% investment in MCI. In June, the U.S. Department of Justice approved the plans of the two companies, which have already formed a joint venture called Concert.

Users unfazed by DEC loss

Some ponder fate of products

By Mary Brandel

Joseph Pollizzi is typical of many Digital Equipment Corp. customers. He is closely watching Digital's vital signs to gauge its future presence at his organization.

But when Digital rolled out another quarterly loss last week — \$160 million before the \$1.2 billion restructuring charge and \$380 million write-down, "the numbers didn't faze me," said Pollizzi, a project engineer at the Space Telescope Science Institute in Baltimore.

"It's always disappointing," he said, "but the real aspect is, is Digital going to do any more [restructuring] than what they've already specified?"

Other customers concurred that last week's financials will have little to no impact on future purchases. Some said they were still encouraged by Digital's strong balance sheet, which showed little debt. Some, like Pollizzi, said they were more concerned about learning which products or services would be continued.

"I'm in a quandary as to what I can depend on," said David Sacco, MIS manager at the rolled products division of Alcan Aluminum Corp. in Cleveland. "The unknown is very disconcerting."

Digital is expected to announce its software strategy this month.

On the bright side...

Last week's announcement did include some good news for Digital customers (see chart).

Flat revenue from fourth-quarter 1993 "surprised everybody because the sales force was in a state of chaos," said John Jones, an analyst at Salomon Brothers, Inc.

Even better, that revenue can be attributed partly to stronger sales of Digital's Alpha AXP systems. Alpha revenue, at \$400 million and 31% of total systems revenue, outstripped VAX sales, which are declining at a rate of 20% to 40%, according to Vincent Mullarky, chief financial officer at Digital.

But even those sales came with a price: Gross margins plummeted to 25%.

Chief Executive Officer Robert Palmer promised more disciplined pricing. "We will continue leadership in price/performance, but we cannot discount products to the point of selling below cost," he said in a teleconference last week.

And the stronger sales were not enough to quell customer concern. "We may be seeing an improvement in sales, but in terms of the services they offer to me, it's still in disarray," Sacco said.

For instance, Digital said recently it would directly service only its top 1,000 accounts. "I don't know if Alcan is one of the chosen 1,000," Sacco said.

What's in store

Last week, Palmer sought to clear the air on some of Digital's intentions. In terms of future sales, the sale of part of the storage unit to Quantum Corp. "is the only major divestment that will significantly impact revenue," Palmer said.

He added that the systems integration unit was too strategic to sell. However, other pieces of Digital Consulting may well be on the block, particularly the outsourcing business, said Dataquest, Inc. in San Jose, Calif.

Palmer said he would entertain bids for semiconductor facilities, but "we're not actively trying to sell" plants.

The Multivendor Customer Services unit, which provides hardware maintenance, will see only modest cuts in the restructuring, even though total service revenue declined 7% from 1993, Palmer said.

And Palmer reiterated his promise of profitability by year's end, although he acknowledged it was an "aggressive" goal.

"We'll see how close they come," said Ed Homko, systems manager at Dr Pepper Co./The Seven-Up Co. in Dallas. "If they turn in another loss like this at the end of the year, it will lower my confidence somewhat."

Digital unveils strong workstations. See page 44.

Digital dilemma

Despite another whopping quarterly loss, a few bright spots appear on Digital's horizon

The Good News:

- ◆ Alpha revenue of \$400 million* surpassed VAX revenue for the quarter
- ◆ Alpha and PC revenue account for 70% of total systems revenue, compared with VAX's 30%
- ◆ Product revenue is even with Q4 '93
- ◆ Alpha sales are up 54%, and PC sales are up 100% from last quarter

The Bad News:

- ◆ A \$160 million quarterly loss (before restructuring), compared with \$113 million net income for Q4 '93
- ◆ Gross margins fell to 25%, which is a 10% decline
- ◆ Service revenue fell 7.6% from Q4 '93
- ◆ Total revenue for the year was down 6% from fiscal '93

*Estimate from Salomon Brothers, Inc.

Group addresses remote LAN management

By Steve Moore

Users will come a step closer to LAN management nirvana this week if the Desktop Management Task Force (DMTF) releases its completed standards for remote hardware configuration and management.

The expected standards, called Management Information Files (MIF), are pieces of the Desktop Management Interface (DMI) introduced in October 1993. The DMI is the overall blueprint for software and hardware configuration; the MIFs are standards for specific aspects of remote management functions defined in the DMI.

MIFs are text files that can be accessed by server-based DMI-compliant applications that are needed to do jobs including software installation, license metering, performance management and trouble ticketing. The MIF for software configuration has not

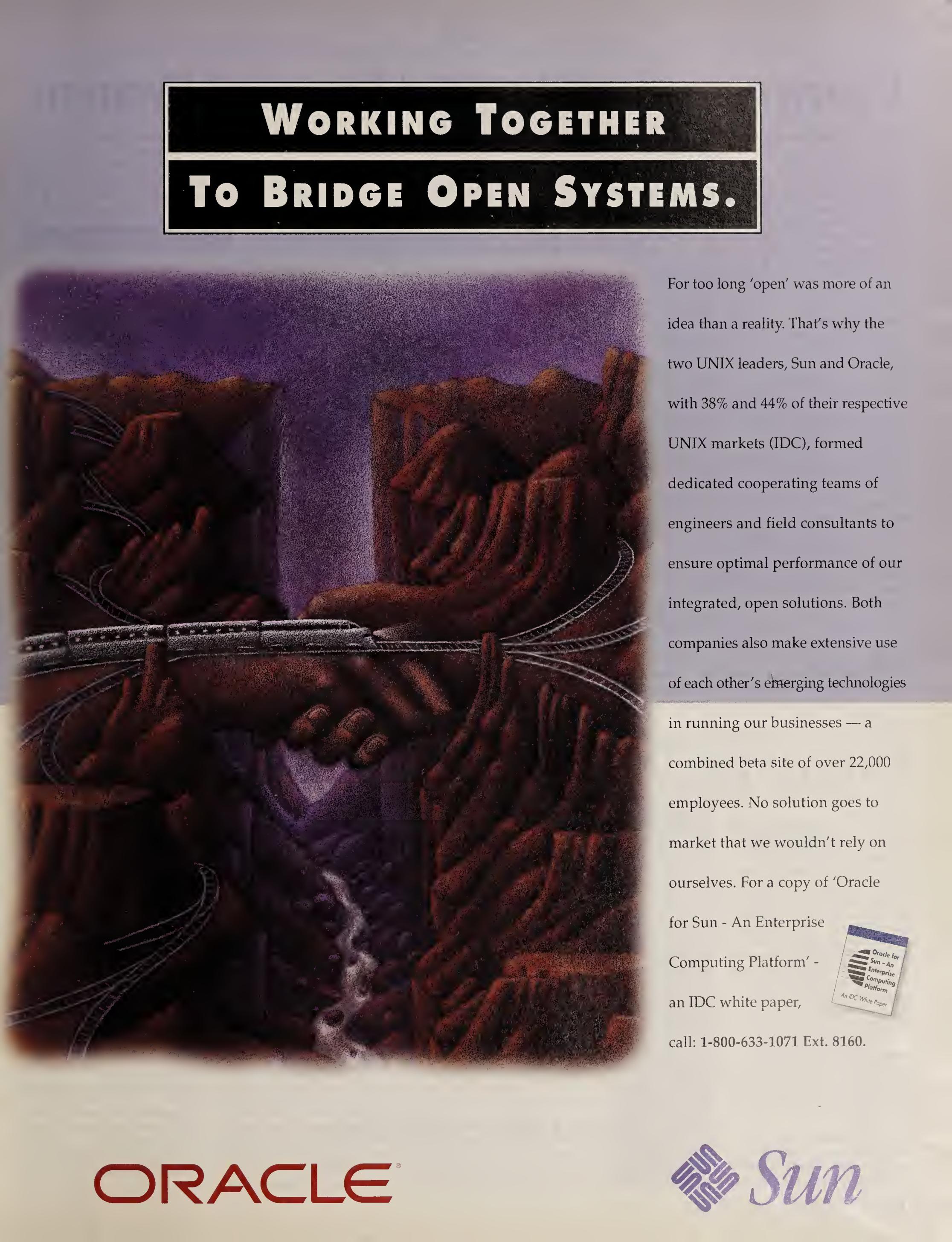
yet been finalized.

"For DMI to become an issue," said Mike Marburg, an analyst at Meta Group, Inc. in Reston, Va., "you need two things: server-side management applications and components that are enabled with MIFs in both the software and the hardware."

Using such applications and components, network managers will be able to determine remotely which types of hardware and software are installed on LAN-attached computers, as well as how they are configured and how well they are performing.

By the end of the year, a DMTF spokesman said, the DMTF hopes to begin a certification process. The DMTF is also expected to name additional companies that have joined its steering committee and to release a list of products that comply with its standards.

McAfee Associates pushes its own standard. See page 44.



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Users see scant impact from settlement

By Stuart J. Johnston and Ed Scannell
REDMOND, WASH.

With the end of the U.S. Department of Justice's investigation, as far as Microsoft Corp. is concerned, the case is closed and the message is clear. No "Chinese wall" means full speed ahead.

The late-July settlement with the Justice Department stopped short of asking sticky questions about whether Microsoft's applications and systems divisions gain illicit competitive advantages by sharing technologies [CW, July 25]. Over the years, Microsoft executives have waffled on the issue of whether the company maintained a separation—a so-called Chinese wall—between programmers in its applications and systems divisions in order to assure third-party developers that they received information at the same time as their internal competitors.

Who cares?

Meanwhile, users are proceeding with their own systems and applications plans, fully aware of the investigation's denouement but mostly unaffected by the outcome, according to a *Computerworld* survey conducted last week (see chart).

In the survey, 85% of users, all of whom were *Computerworld* readers in organizations with at least 2,500 employees, said the outcome will not affect their plans to purchase, or not purchase, Microsoft products. Only 9% of 117 respon-



dards on the desktop," said Joe Latekaw, a computer specialist at the Department of Defense's finance and accounting systems organization in Indianapolis. "Getting applications from the operating system vendor will probably give us less headaches. I don't want to have to shop for desktop applications to mix and match with the operating system."

Additional results of the survey

showed that 34% believe increased cooperation between the two divisions would improve Microsoft's products, while 27% thought it would speed those products' time to market.

Microsoft executives recently said they see nothing wrong with cross-pollination between the applications and operating system groups.

"We do not have a Chinese wall, and we do not have to provide a level playing field for other independent software vendors," said William Neukom, Microsoft vice president of law and corporate affairs. "But we always have provided to [independent software vendors] all the information they might need."

Silence is golden

While some developers remain worried, major players such as Lotus Development Corp. were notably absent from those crying foul. Lotus and Borland International, Inc. representatives declined to comment on the settlement.

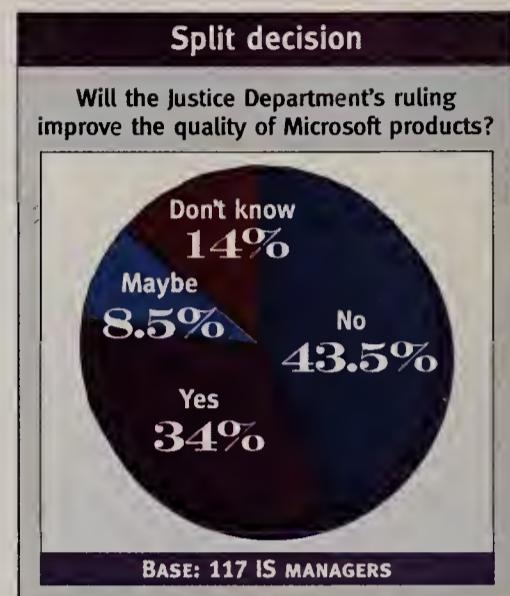
That sort of reticence on the part of leading independent software vendors may be inspired by a fear that voicing their complaints could hurt business, especially since the government refused to act. At the very least, it could create the impression that they are sore losers.

Smaller developers are not so politically correct, however.

"This settlement reminds me of the story about the elephant that was pregnant for four years and then gives birth to a mouse," said Vadim Yasinovsky, president of Clear Software, Inc. in Newton, Mass. "The settlement will change

nothing as far as [applications developers] are concerned."

Perhaps not surprisingly, Mike Brown, Microsoft's vice president of finance, last week announced the company is now the leader in every major applications cate-



Source: Computerworld Database Division, Framingham, Mass.

gory. Ironically, Microsoft executives have historically trotted out the defense that the company was not the leader in any major application category in order to ward off accusations that it held a monopoly.

In addition, the company's applications division was an early supporter of Windows, much like it was first out the door with applications for the Macintosh, said one Microsoft executive.

Senior editor William Brandel contributed to this report.

Microsoft antitrust settlement

Experts say DOJ made its best case

By Mitch Betts
WASHINGTON

The U.S. Department of Justice has taken a lot of flak for its narrow antitrust settlement with software titan Microsoft Corp., but several independent legal scholars said a broader case would have failed.

"Competitors may have wished for more, but they vastly underestimate the difficulty of winning antitrust cases in a courtroom," said William E. Kovacic, a law professor at George Mason University in Fairfax, Va.

"It is likely the government would have lost," he added, because today's generally conservative judiciary is not receptive to large-scale antitrust assaults like the earlier cases against IBM and AT&T Corp.

The big disappointment in industry circles was that the government did not require a "Chinese wall" between Microsoft's operat-

The sooner, the better

Even Washington's most ardent trustbuster, U.S. Sen. Howard M. Metzenbaum (D-Ohio), said he was satisfied that the Microsoft settlement was pro-consumer. "There are some other practices by Microsoft that perhaps should have been included in the settlement, such as discount tie-ins, but overall, consumers are better off that the Justice Department reached a quick settlement instead of spending years in court litigation," Metzenbaum said.

ing systems and applications development units [CW, July 25]. Another option was to force Microsoft to share information about application programming interfaces with other developers.

Either option would have required proving that Microsoft's MS-DOS and Windows operating systems are "essential facilities" in the PC software market and therefore must be shared with other players. But some judges are skeptical of the doctrine, which is usually applied to electric utilities and the like and is not easily proved [CW, May 16].

After extensive research, the Justice Department doubted it could legally support such a case. "It would have been a bold and risky thing to bring a case like that, and it would have been a very difficult case to win," said Stephen Caulkins, a law professor at Wayne State University in Detroit.

Moreover, those remedies would have required elaborate and per-

haps intrusive regulation of the software industry. "The issues they didn't tackle are the ones that are messier to litigate and messier when it comes to writing a decree," said Warren Grimes, a professor at Southwestern University School of Law in Los Angeles.

Instead, the Justice Department took the pragmatic approach of targeting Microsoft's contracts, which were easy to attack, difficult for Microsoft to defend and quick to fix, Grimes said.

Couldn't wait any more

The department was looking for a quick fix because it knew resolution of the case was long overdue.

"We got 100% of what we would have gotten at the end of a trial and appeal. And we got it [July 18] instead of three years from now after trial and appeal," said Anne K. Bingaman, assistant attorney general for antitrust. "So that was the reason for settlement."

"The ban on the [contract] pro-

visions we objected to most strongly—per processor and minimum commitments—took effect immediately," she said. "That opened the market immediately, and I'm very proud of that aspect."

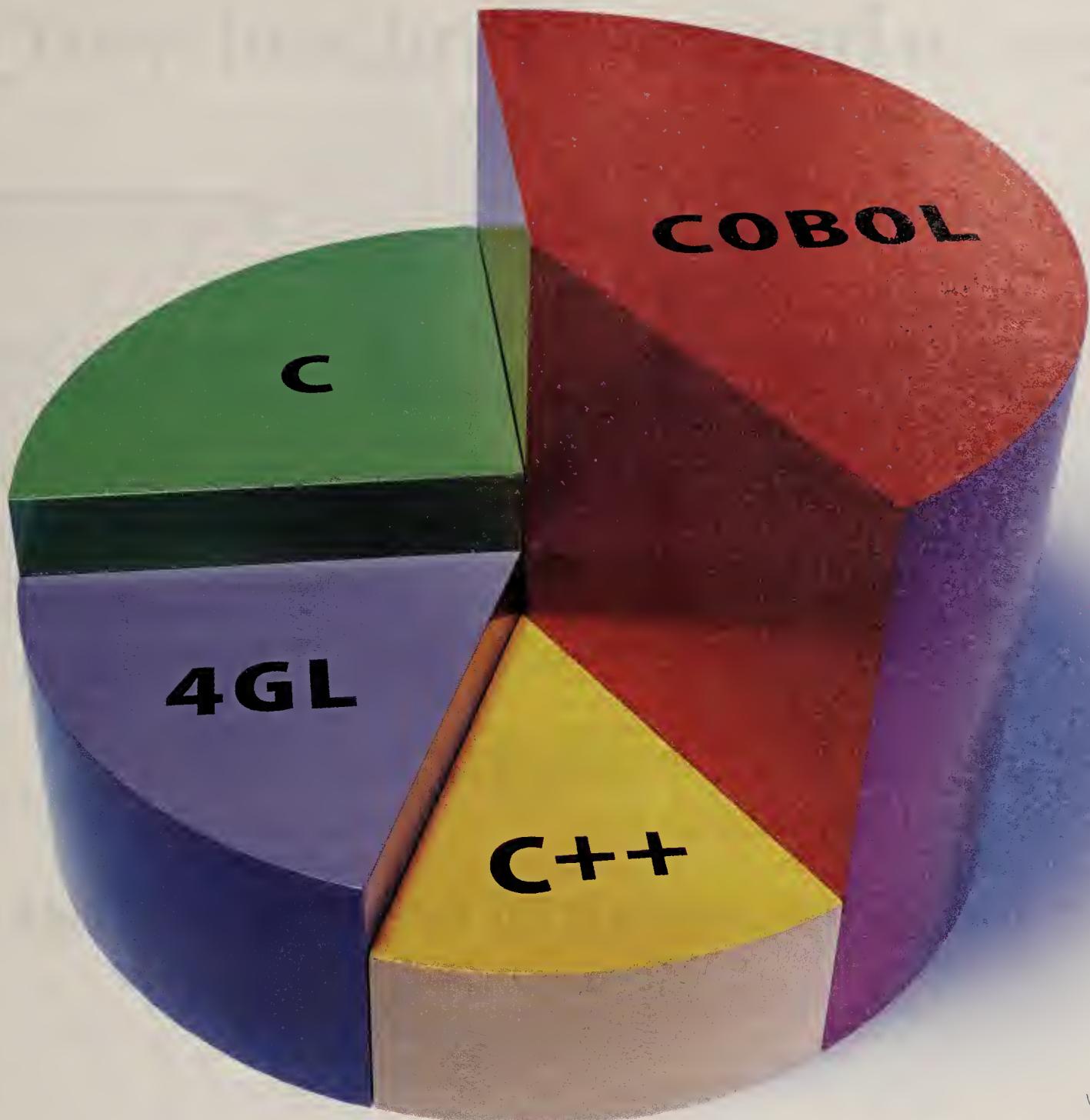
Still, the case has raised the question of whether antitrust enforcement is too slow for fast-moving industries such as software.

"Antitrust intervention is a very clumsy tool for correcting perceived problems in high-tech industries. By the time antitrust officials figure it out, the industry has already changed," Kovacic said.

Resolution of the Microsoft case, which took four-and-a-half years, was especially slow because it was stuck in the deadlocked Federal Trade Commission before being snapped up by the Justice Department.

"That was wasted time. Three years ago this consent decree might have had a real [positive] impact on OS/2 and DR-DOS," Grimes said, referring to the operating systems of Microsoft rivals IBM and Novell, Inc.

IBM sees settlement helping OS/2. See page 39.



With all the hype surrounding business programming, one thing has been conspicuously absent: the facts.

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Changes to Internet Protocol worry users

By Suruchi Mohan
TORONTO

The Internet Engineering Task Force (IETF) last week selected the next generation of the Internet Protocol, leaving some customers wondering whether the new IP's benefits will be worth the expense and hassle.

The IP6 protocol is essentially the Simple Internet Protocol Plus with some modifications. IP6 provides features many users have been clamoring for, including more IP addresses, easier configuration and better security.

But the price is high for users who will essentially have to upgrade their entire router installations. Customers have two choices: either run both the old and new IP stacks together in routers or put in gateways to translate between the old and the new.

"Transition will be a challenge," said

Bob Moskowitz, a software support specialist at Chrysler Corp. in Detroit.

It is this uncertainty that has left David Pensak, principal consultant for advanced computing technology at Du Pont Co. in Wilmington, Del., "terrified" at the prospect of moving the chemical giant's 4,000 IP-networked computers to the new protocol.

Patching it up

Many attendees wondered aloud if patches to IP4 would not have done what IP6 promises. Bob Moskowitz, Chrysler support specialist, didn't think that would make life any easier for the administrator, who would then have to deal with every incremental change as it came along.

Translations are a no-win deal for one administrator, who asked not to be identified, at an aerospace company that uses tens of thousands of IP addresses.

Expecting the worse

"We expect everything to break and [there being] absolute chaos for a long time," Pensak said. "If we have to physically change and then test 4,000 machines, this is going to be the biggest problem since the bubonic plague." Pensak, however, did applaud the decision and said he hoped to see vendors implement the protocol so it works.

If the translations do not work, they will generate a huge legacy system. If they do work, "we have a routing problem. Our backbone network handles five protocols, and handling yet another is too much to ask," the administrator said.

For Brian Carpenter, group leader of communications systems at CERN, a research laboratory in Geneva, the decision to transition would have to be based on a cost/benefit analysis.

Big change

The IETF is certainly aware of the magnitude of the transition issue. "There's been a huge amount of thinking on migration," said Allison Mankin, a co-area director. Two working groups are currently deliberating on long- and short-term migration strategies, she said.

Apart from the physical transition

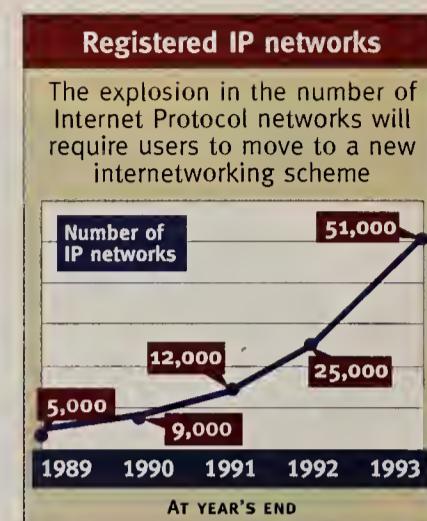
problems, some users are skeptical about the value of the new version. If IP6 enables networks to become secure with

Plug and Play support for audio, video and other high bandwidth applications, it will be a tremendous help, the aerospace user said. If it is only slightly different, there will be "a strong disincentive to deploy it, even if the Internet requires it," the user said.

In any case, customers have some time to think about the issues and to plan how they will

get there, if at all. Products are not expected from vendors for at least three years.

Senior editor Gary H. Anthes contributed to this story.



Source: Internet Society, Reston, Va.

get there, if at all. Products are not expected from vendors for at least three years.

Senior editor Gary H. Anthes contributed to this story.

Point-to-Point Protocol smooths path to ISDN. See page 50.

Banyan invades enterprise server territory

By Elisabeth Horwitt

After languishing for years as a network operating system also-ran, Banyan Systems, Inc. seems on the verge of taking the lion's share of the enterprise network services market. Strong second-quarter results and several major new customer contracts are evidence that the company's strategy of platform-independent network services is paying off, analysts said last week.

"I was very positive on Banyan even before [last week's second-quarter] results," said Marty Palka, a principal analyst at Dataquest, Inc. in San Jose, Calif. "I believe they are leaders in evolving from a network operating system to a network services provider, and that they have a technological lead of approximately two years over their competitors."

Crucial to success

Key to Banyan's continued growth is the delivery of promised products over the next few months. Banyan is expected this week to announce its long-awaited Windows-based network management system, which is based on the Windows version of Hewlett-Packard Co.'s OpenView. The product will include applications for managing various Enterprise Network Services and devices, a source close to HP said.

And in August, Banyan plans to ship Intelligent Messaging III, a version of its messaging back end that will be integrated with its recently acquired front-end messaging producer, BeyondMail 2.0.

Right now, Banyan is the only major vendor to meet a growing corporate need for an integrated set of enter-

prise services, including naming, directory, messaging and security, across a broad range of systems platforms, analysts and users said. Novell, Inc. is expected to ship its first viable offering, NetWare 4.1, by year's end, while Microsoft Corp. is not expected to begin shipping directory services for Windows NT 3.5, codenamed Daytona, until next year at the earliest.

Companies such as GTE Telephone Operations with immediate needs for enterprise-wide network services see Banyan as the only choice. The Irvine, Texas-based GTE Corp. subsidiary recently signed a contract with Banyan for a 30,000-seat network that will include Vines; Enterprise Network Services for HP/UX and The Santa Cruz Operation's SCO Unix; and BeyondMail.

"We're making a major change from an office automation LAN environment" to one that will support mission-critical applications, including distributed databases, that will link users across 40 states, said John Miller, director of office systems and telecommunications at GTE Telephone. "We looked at everyone, and at this time, the only answer in the marketplace was Banyan."

Indeed, user demand for Enterprise Network Services is beginning to take off, driven by the proliferation of enterprise-wide PC-based networks and groupware and message-enabled applications that need an enterprise directory, Palka said.

As continuing evidence of its growing market and financial prowess, Banyan last week announced strong second-quarter earnings, including a 28% increase in software revenue and a 51% increase in overseas business, compared with the same quarter last year. Banyan added 460,000 seats in the second quarter alone, according to Peter Hamilton, Banyan president and chief operating officer.

Banyan's recent acquisition of Beyond, Inc. is also beginning to pay off, Hamilton reported. Revenue for BeyondMail grew more than 100% in the second quarter, compared with the same quarter last year when Beyond was a separate company, he added.

LAN outsourcing vendors lose sight of users' needs. See page 43.

New exec onboard

Looking for seasoned help in its push into the systems software market, Banyan last week hired John M. Paul, former head of Compaq Computer Corp.'s systems software organization, for the newly created position of senior vice president of product development.

"The biggest strength I bring is to help Banyan execute their strategy at a rate that exceeds their current goals," Paul said.

At Compaq, Paul was responsible for integrating operating systems into hardware platforms. There he masterminded SmartStart software, which automates the configuration of Compaq PCs. Also, as a founding member of the Open Software Foundation, Paul largely directed the development of Motif as an industry standard in about seven months, Paul said. —Elisabeth Horwitt



John M. Paul will fill new Banyan position



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It's a VisualAge at Object World

By Kim S. Nash
SAN FRANCISCO

IBM previewed two object-oriented development technologies that build on its VisualAge object generator at Object World here last week.

OBJ Chart, a tool to model objects, and VisualBuilder for C++, an application generator, are not yet full-fledged products, but the demonstration "shows where we're headed," said Steve Mills, general manager at IBM's Software Solutions division. The products should be ready by year's end, IBM executives said.

IBM also announced that Windows versions of its VisualAge object-oriented development toolkit and a Windows version of IBM's Smalltalk programming language have entered beta testing. General availability of the products is slated



for the fall, Mills said.

"Smalltalk is crucial to us so we're quite glad to get it" on Windows, said Calvin Opitz, vice president of Global Electronic Markets, Inc. in Wellesley, Mass.

But IBM's promise that applications generated under OS/2 will be portable to Windows "is even more interesting," Opitz said. Global Electronics has yet to choose target platforms for a combination text/visual documentation application it is building, so the ability to run under OS/2 or Windows gives the firm more freedom, he explained.

Moreover, VisualAge, which runs on OS/2 and AIX, "is about to move onto" Microsoft Corp.'s latest version of Windows, code-named Chicago, and Telligent, Inc.'s operating systems, Mills said.

For more Object World announcements, see page 59.



Five companies were honored last week at Object World in San Francisco during the Computerworld Object Application Awards Program. Pictured are (from bottom left to right): Waller Ringger and Daniel Schelz, IBM Switzerland; Greg Smith, Boeing Defense & Space Group; Steve Mills, IBM. From top left to right: Carl Webster, Naval Computer & Telecommunications; Bill Hoffman, Object World Expositions; John Wiley, David Pett and Tom Weber, all from Pacific Bell; Steve Jobs, Next Computer, Inc.; Gary Beach, Computerworld publisher; Mike Baker, Caterpillar, Inc.; Mike Stumate, Naval Computer; Cor DeGroot, IBM Switzerland.

Prebuilt applications assist in workflow

By Lynda Radosevich

In an attempt to seed the workflow market, Action Technologies, Inc. in Alameda, Calif., said it will ship this week a cheaper, easier-to-use version of its workflow engine for Lotus Development Corp.'s Notes.

Action Workflow Manager for Lotus Notes now costs \$199 per user for 10 users, down from \$650 per user. It ships with ready-to-use workflow applications for to-do lists, meeting planning and action-item management.

For Babson College in Wellesley, Mass., the prebuilt applications are "fantastic because what we put into our [workflow] design calls for those capabilities," Chief Information Officer Richard Kesner said. He is leading Babson's

schoolwide project to rework student services such as financial aid using Notes, Action Workflow Manager and Microsoft Corp.'s SQL Server. "We were going to build the [workflow applications] in Visual Basic, but I prefer to go right out of the wrapper because life is too short to spend programming," Kesner said.

Analysts said most users would probably use the prebuilt applications to get their feet wet and then create custom applications.

Action's nearest competitor, Reach Software Corp. in Sunnyvale, Calif., charges roughly \$300 per user for 10 users for its Notes workflow product. But even with its price advantage, Action faces an uphill battle in jump-starting its version in the workflow market.

Bruce Silver, an analyst at BIS Strategic Decisions in Norwell, Mass., said most firms will not pay \$200 per user for nonstrategic workflow automation projects.

UK bank launches workflow winner. See page 46.

High bids to raise narrow-band costs

By Michael Fitzgerald

The unexpected bidding war at last week's auction for narrow-band Personal Communications Services (PCS) licenses could mean higher prices for users and less competition in the cellular industry.

Prices for the 10 narrow-band licenses up for sale had hit more than \$50 million each by the end of Wednesday, and bidding continued through press time. Observers had expected the auction to fetch \$50 million total.

Big bucks

The high prices suggest that narrow-band networks will cost significantly more to build than was initially expected. This could mean higher service charges for the new features these networks will offer, such as two-way paging, voice messaging and acknowledgment paging, which lets users know that a page has been received.

In addition, it could mean higher prices for broadband PCS licenses later this year, forcing cellular vendors to consolidate, observers said. Last week, for example, US West and AirTouch Communications agreed to merge their cellular operations.

Ultimately, some promising technologies could be lost, as evidenced by AT&T Corp.'s decision last week to close down EO, Inc., which had an interesting product concept but little market penetration, according to analysts.

"I see the consolidation as a two-edged sword," said Lee Nolan, senior telecommunications engineer at Travelers Insurance Co. in Hartford, Conn. "When you have nothing but big players in that scene, they understand the importance of things like roaming, where sometimes smaller players are concerned with only their ar-

ea. The bad news is, it'll be... more expensive" — at least initially.

"There's a correlation between license prices and user prices. Somehow vendors have to recoup their costs," said Roberta Wiggins, an analyst at The Yankee Group in Boston.

"To justify a bid of \$70 million,

PCS progresses

DECEMBER 1989

Telocator (now PCIA) requests FCC establishment of PCS proceedings

DECEMBER 1991

FCC holds hearings on PCS

JANUARY 1992

FCC initiates 92.2 spectrum reallocation Notice of Proposed Rule Making

JULY 1992

FCC releases PCS NPRM for narrowband and wideband PCS services

SEPTEMBER 1992

FCC allocates 220 MHz for emerging technologies

SEPTEMBER 1993

FCC releases the Action Docket for wideband PCS and sets spectrum auctions in motion

JULY 1994

Narrowband auctions take place

LATE 1994

Wideband auctions begin

Source: "Outlook on Mobile Computing," Brookdale, Calif.

not counting the cost of network build-out or interest, a wireless provider would need 194,000 customers paying around \$29.99 per month," said Timothy J. Schmidt, director of mobile computing at Probe Research, Inc. in Orlando, Fla. Some paging vendors do have more than 500,000 customers.

Best intentions

In a major affirmative action effort, the federal government established rules to allow minority and women-owned firms to acquire PCS licenses for 25% less than the top bids, but the bidding frenzy that has

marked the PCS auction may shut most or all of those firms out of the market entirely.

In the meantime, users welcomed the potential for new paging services that the narrow-band PCS auction portends.

"It amazes me how people have to keep in touch these days. So the better the paging capabilities, the better you can keep your business in touch," said Stanley Dobrowski, data center manager at Bergen County Utilities Authority in Little Ferry, N.J. Dobrowski called the inability of current pagers to verify receipt of messages a "severe deficiency."

Senior editor Ettis Booker contributed to this story.

Native Microsoft suite coming for Power Mac

By Mark Halper

■ **By early September, users of Apple Computer, Inc.'s Power Macintosh will be able to buy something many have been waiting for since the machine's March introduction: a native version of Microsoft Corp.'s Excel spreadsheet.**

Power Macintosh versions of Microsoft's Word program for word processing and its PowerPoint presentation application will follow a month later in early October, Microsoft product manager Don Pickens said last week.

Together, the three programs form the Microsoft Office suite, which Microsoft will begin offering in incomplete packages in September, Pickens said. Those packages will include coupons entitling the users to Word and PowerPoint when they become available, he said.

Office envy

The Power Macintosh version of Microsoft Office will arrive to find a loyal following already in place among 68000-based Macintosh users

OFFICE (LICENSES SHIPPED)		
Version	1993	Market share
Windows	2.1 million	64.8%
Macintosh	300,000	100%

Source: Dataquest, Inc., San Jose, Calif.

In a move well received by some users, Microsoft said it is packaging separate Microsoft Office 4.2 versions for 68000-based Macintoshes and for newer PowerPC-based Power Macintoshes, all in one shrink-wrapped box.

"That's good because as we upgrade individual machines, we don't have to buy new software," said Todd Nugent, director of information services at Chapman and Cutler, a Chicago-based law firm. The firm eventually plans to upgrade about 600 older Macintoshes to the PowerPC-based Power Macintoshes.

Two-for-one ups ante

Users pointed out that the two-for-one packaging is probably one reason why Microsoft priced the forthcoming Microsoft Office 4.2 for Macintosh on the high side. Pickens said the "estimated retail price" will be \$499 for a new user or \$259 after a \$40 rebate for an upgrade. Microsoft recommends a minimum of 8M bytes of RAM to run Office 4.2 for Macintosh.

Individual applications will sell on the retail level for \$399 new or \$99 after a \$30 rebate on upgrades, he said. The rebates are in effect until Dec. 31.

"We're happy for any compassion we get from Microsoft," Nugent said, referring to the rebate. He characterized the pricing as "still a little steep" but said prices are more reasonable than the last time Microsoft upgraded Office for Macintosh.

Mel Gilbert, a real estate agent at Re/Max Professional Realty, Inc. in Lionville, Pa., agreed. "It's a little more pricey

than I would like, but to get that quality of software, you might have to pay that much," he said.

Re/Max Professional Realty is a beta site for the forthcoming version of PowerPoint 4.0, which is part of Office 4.2. Gilbert, who is running PowerPoint on a 68040-based Macintosh, praised it for new features such as Object Linking and

Embedding (OLE)-driven cutting and pasting, which permits him to easily insert information from Excel into a PowerPoint presentation program.

OLE is Microsoft's object-based document management technology, which permits users to swap pieces of applications in and out of other applications.

Microsoft touted other advancements

in Office 4.2 for Macintosh last week, including the following:

- Improved "IntelliSense" technology that anticipates user action and automatically corrects spelling errors.
- Improved scripting support, which allows information systems managers to automate loading and reconfiguration procedures for a Macintosh shop.

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CONTINUED FROM PAGE 1

that customers who buy the CMOS hardware must upgrade to the latest release of MVS/ESA and related system software.

The upcoming models, positioned as stand-alone general-purpose mainframes, should be useful to a wider range of customers than the more specialized parallel transaction and query engines that IBM introduced in April. Those typically must be linked to ES/9000 511 and 711 series processors, which IBM acknowledges make up only 15% to 20% of the installed base.

Coming this fall

Carl Greiner, an analyst at Meta Group, Inc. in Westport, Conn., said IBM is moving toward a September introduction of the general-purpose CMOS mainframes, with shipments starting before year's end. IBM declined to comment on its plans.

While the new systems will run only a single copy of MVS—and therefore be unable to take full advantage of the CMOS hardware's parallel processing and data-sharing capabilities—users and analysts said this should provide a good starting point for shops eager to begin the migration trek.

Paul Quade, director of capital planning and resource management at Galileo International, an on-line reservation consortium in Englewood, Colo., agreed that supporting earlier software on the parallel hardware will broaden the appeal of those machines. "IBM will widen its market," he said. "A lot of people who are running older software don't want to change that."

Costly upgrade

Beech Aircraft, for example, currently runs MVS/ESA 4.3 on a pair of 3090 Model 400E mainframes but would have to buy more recent hardware to go to MVS/ESA 5.1, Duntz said.

"I have no reason not to stay where I am, and in fact, I need to stay where I am to support the hardware I have now," he added. The ability to run earlier software releases on the CMOS-based hardware would eliminate that problem and "allow us to look at it as a general-purpose mainframe," Duntz said.

He said he also expects IBM to offer lower entry-level pricing than the \$25,000 to \$27,000 per MIPS it charges for the current parallel System/390 machines.

Duntz said Beech eventually would like to see full parallel hooks built into the earlier MVS releases so they can run in a parallel sysplex installation. But IBM has not yet committed to do that, he said.

How it works

The single-image general-purpose system is expected to consist of six 13-MIPS processors that could run individual jobs or gang up to provide modest parallel capabilities.

The 13-MIPS performance roughly equals the power only of IBM's old 3080-class boxes, but the machine "will make it easier for customers to get ready to move to the new world," Greiner said. "You can bring it over slowly and start getting some benefit. It puts you on the price curve of CMOS."

CMOS R Us

Support for running older software on the CMOS-based System/390 hardware would provide the following benefits:

- ▶ Enable a much wider group of customers to use the CMOS technology.
- ▶ Let users run in single-image mode without upgrading to MVS/ESA 5.1.
- ▶ Eliminate the need to upgrade to latest releases of CICS and IMS.
- ▶ Eliminate the need to buy coupling facility for parallel sysplex environments.
- ▶ Provide a better growth path than 9221 air-cooled models.

IBM already offers general-purpose CMOS mainframes as part of its air-cooled 9221 series. However, those are rack-mount models for smaller shops, while the upcoming systems should be "a better long-term investment" because they will use the same cabinets as the full parallel machines, said Charlie Burns, an analyst at Gartner Group, Inc. in Stamford, Conn.

IBM has been running earlier versions of MVS on the CMOS hardware in its labs but shied away from supporting them before to protect the demand for traditional ES/9000s, which are based on emitter-coupled logic (ECL) technology and have higher prices and profit margins, Burns said.

"Clearly, IBM's first approach is not to bleed business away from the ECL machines on which they make more money," he said. "If you're a businessman, you can't fault that. The only problem is, by doing that, they kind of shortcut their ability to succeed long-term" with the CMOS-based systems.

The CMOS performance should improve significantly during the next two years, starting with a 25-MIPS processor due out in mid-1995, analysts noted.

Net management

CONTINUED FROM PAGE 1

products that vendors can offer, "the trick is to get those products to communicate with each other," said Jim Moorhouse, manager of network management strategies at Motorola, Inc. "That's where we need a manager-to-manager communications standard."

Unfortunately, ever since IBM began enhancing the original OpenView code, which is the basis of NetView/6000, the two companies and their systems, have barely spoken to each other. This is hurting users.

American Cyanamid, for example, has two divisions using OpenView and another using NetView/6000. It wants users to be able to manage its networks using either platform as a focal point, said Gil Irizarry, a network manager at the Clifton, N.J., chemical firm.

This would "allow you to manage my resource if I'm not available or vice versa. Then our help desk groups could learn how to back each other up when necessary," Irizarry said.

Anxious users

On the plus side, many customers are eager to get their hands on distributed management systems that IBM, HP and Sun Microsystems, Inc. are rolling out. If a company has 10,000-plus workstations, using a centralized Simple Network Management Protocol (SNMP)-based polling system such as IBM's NetView/6000 "is a real problem" because of the overhead, said Rich Kuzman, vice president of telecommunications operations at Fidelity Investment Co.'s communications division.

The ideal, Kuzman said, would be for central information systems to collect alerts across the enterprise and then notify the appropriate managers, who could diagnose the problem locally.

Both IBM's and HP's upcoming introductions provide some degree of distribution within

their own platforms through commercial distributed SQL database products from companies such as Oracle Corp. and Sybase, Inc. The idea is to have local management nodes collect configuration and alert data about their particular domains and then allow users and applications to do queries as if the distributed nodes were one database.

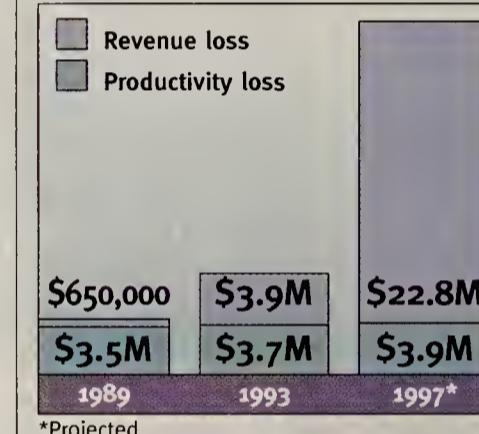
For example, an inventory management application would be able to query the distributed database for information on the location of all routers or all OS/2 PCs. Alternatively, a network manager could track a problem to its source by collecting traffic and error data from several types of devices and several locations.

Failed effort

A group of application vendors formed the Management Integration Consortium last fall with the hope of creating an industrywide database standard. However, that group has lost steam, analysts and vendor spokesmen said.

Slippery slope

The costs of network downtime to business users because of LAN and server outages are expected to increase as network systems proliferate in the next three years



Source: Infonetics Research, Inc.

ing the management data, he said.

HP plans in the second half of 1995 to introduce a data repository with common object definitions. This will enable OpenView applications to share data, an HP spokesman said. However, there is no industrywide effort to provide such definitions across network management platforms, he added.

On a more positive note, Sun, HP and IBM platforms should at least be able to exchange alerts and alarms sometime next year through common support of the SNMP Version 2 Manager-to-Manager protocol.

Distributing the management load

In the "watch this space" department, major network management vendors are expected to announce the following:

- Sun is expected by year's end to introduce Encompass, the distributed version of SunNet Manager that will be based on NetLabs, Inc.'s 3G Dimons. The product will have a distributed, object-oriented repository for managing network devices, connections and applications, a spokesman said.
- Sun, IBM and Hewlett-Packard are expected by year's end to provide software that intelligently correlates multiple alerts to identify the source of a problem. Sun and HP will use NetLabs' technology; IBM is enhancing

its existing offering.

- IBM has plans to enhance the interaction between mainframe and RS/6000 versions of NetView. This will allow users to manage mainframes and AIX-based systems "as a single entity" by integrating the object data structures of both versions, according to Sanjiv Ahuja, IBM's director of network management platforms.
- HP is preparing to provide mainframe management for OpenView via applications jointly developed with Legent Corp. OpenView currently manages SNA via Peregrine Systems, Inc.'s OpenSNA application.

—Elisabeth Horwitt and Steve Moore

Two Strategies for Client/Server Applications Development

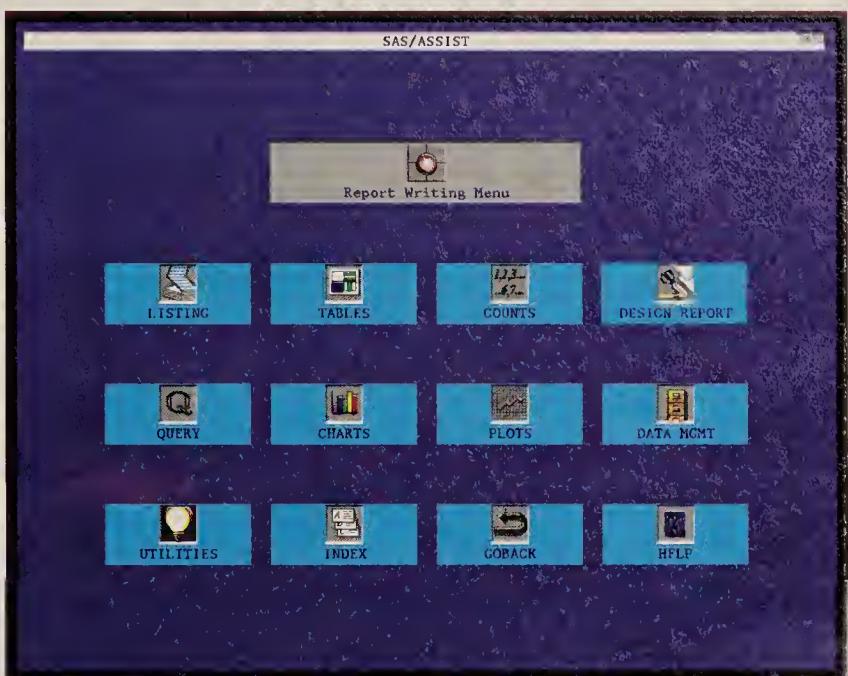
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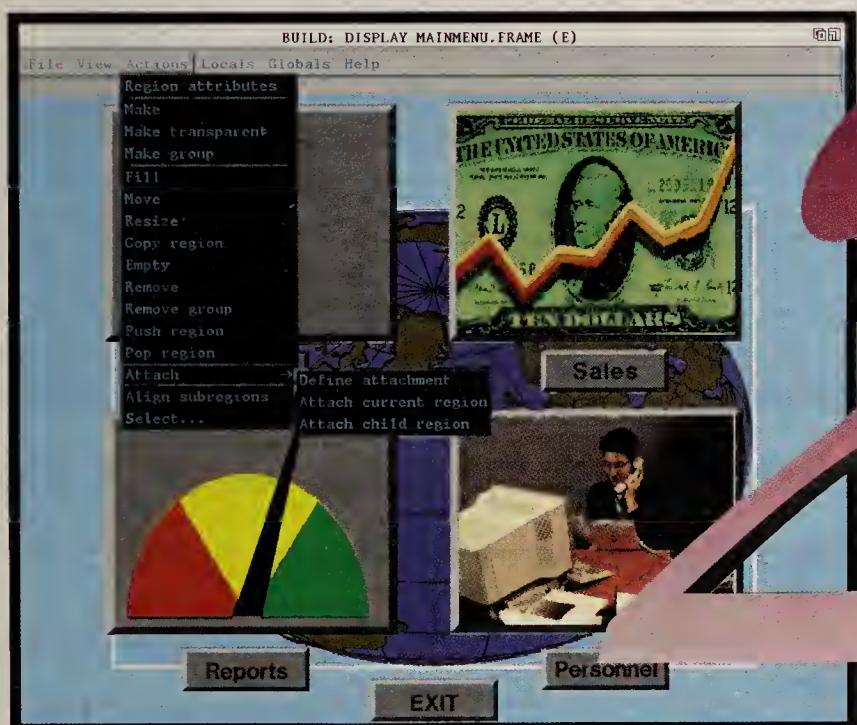
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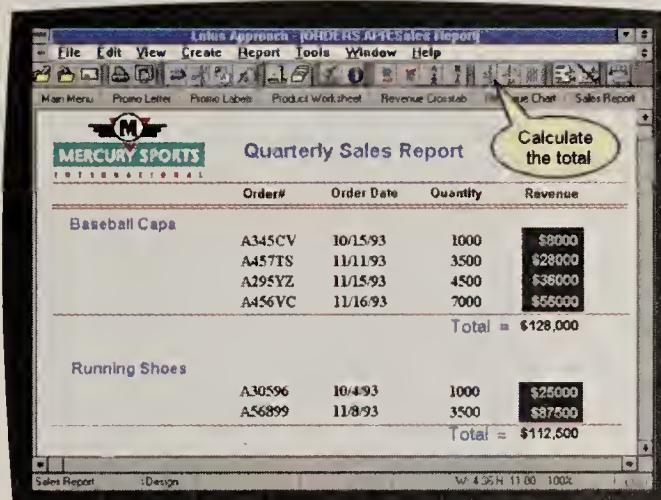
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GUIs

CONTINUED FROM PAGE 1

On average, training and support for GUI-based software costs \$1,300 to 1,500 per user per year, according to Priscilla Tate, executive vice president at Technology Managers Forum in New York. These costs will accrue as more graphical complexities are delivered.

"The biggest single complaint I have is that the icons are not as obvious as the designers apparently think they are," said Bill Murray, director of IS and strategic technology at Tribune Broadcasting Co. in Chicago.

For example, WordPerfect Corp.'s recently shipped WordPerfect for Windows 6.0a features 45 icons and buttons. One cryptic icon, a capital L with triangles next to it, represents a tab set. In Lotus Development Corp.'s Notes, one SmartIcon appears as a black star against a yellow page; when pressed, the pop-up dialog box reads "Scan Unread."

Ineffective software

The major software vendors acknowledge that PC software is so overfeatured and nonintuitive that it does not meet users' needs. Noting PC software's shortcomings in his Windows World keynote address, John Edwards, an executive vice president at Novell, Inc., cited a Novell study that indicates PCs now hold only 5% of the information employees use to perform their jobs each day.

Yet even as vendors acknowledge this, their solution to each complexity has been to market something more complex to address it.

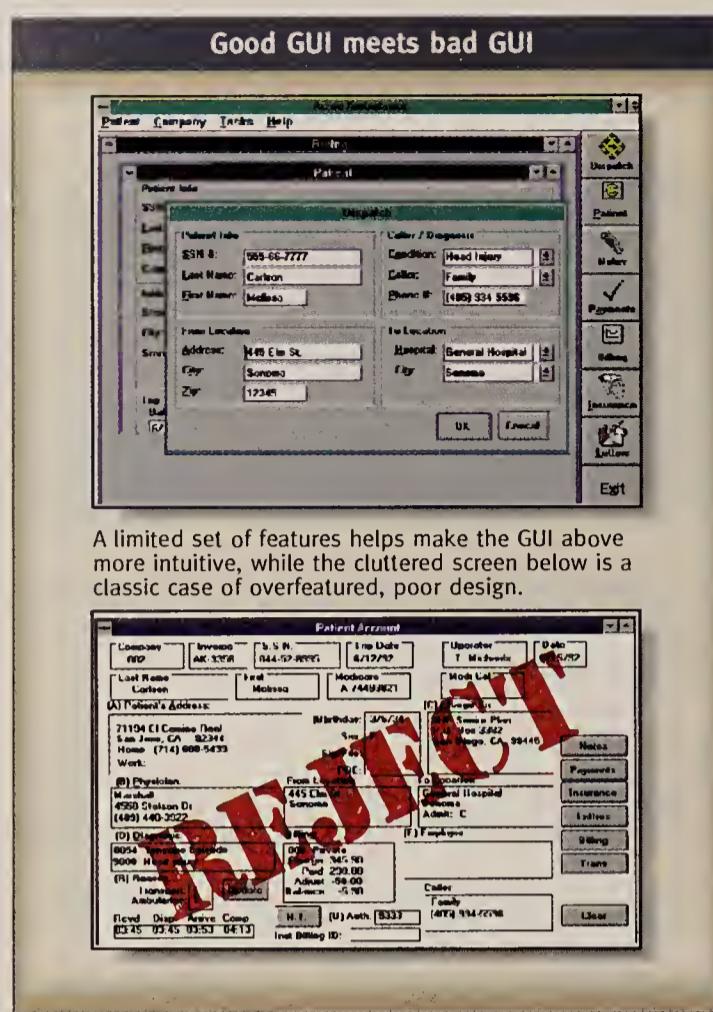
For example, Microsoft's Windows World booth distributed position papers claiming that end users in its test laboratories were 10 times more productive with Chicago than Windows 3.1. On the other side of the booth, the company demonstrated a new "start" feature in Chicago that illustrates how difficult it is for end users to navigate through all of Windows' features.

The start button, located on the task bar (relocated to the bottom of the screen in the demo), returns users to where they originally began a task.

"That start button is sort of like the F1 key on a dumb terminal," said Kirk Ostby, manager of production services at Indiana Farmers Mutual Insurance Group in Indianapolis. His company has yet to move to Windows, Ostby said, partly because the insurer is not convinced Windows would make its users more productive.

"We probably will move to Chicago when Version 4.1 comes out, if we can configure the GUI so that it is helpful in [the Windows] environment," Ostby said.

Users and vendors agreed that too much technology is being thrown at customers. That usability problem will only become more severe as GUIs lift their focus from desktop



Source: Corporate Computing, Inc., Bannockburn, Ill.

application to groupware, analysts said.

Vendors contend they are scurrying to address the clutter issue. Microsoft, for example, has hired anthropologists to study how end users accomplish group tasks.

Developers at Microsoft are now required to participate in usability studies on how end users — not developers — do tasks.

Not surprisingly, the dominant application suite in the market, Microsoft's Office, scores the highest in usability studies conducted by National Software Testing Laboratories in King of Prussia, Pa.

"There's been a tremendous amount of evolution targeting the interface toward more experienced users," said Mussie Shore, a chief designer at Lotus. "But there has been very little done to address new users."

Meanwhile, as the current bunch of applications duke it out for the usability crown, vendors are preparing to launch a new onslaught of Chicago-based applications, making the complexity factor even worse.

"The good news is Chicago should be more intuitive," Tate said. "The bad news is that a new intuitive interface will ultimately require more training."

Net utility eases LAN file sharing

By Lynda Radosevich

Many information services professionals are fond of the file-sharing, workgroup-enhancing capabilities of LANs but have yet to find an affordable way to make it easy for end users to share files and navigate network drives.

To alleviate pieces of this LAN problem, analysts said they expect to see more products like the one Mountain View, Calif., start-up First Floor, Inc. recently announced.

First Floor recently began shipping Network Central, a \$99.95 graphical network utility that lets end users keep related documents from multiple PC and network drives together in a metaphorical folder.

An easier path

Other users who have been granted permission can access the folder and work on the files. The files stay put, but they appear as if they are on the users' individual desktops. The benefit is that users do not need to know complex network paths such as M:\budget\q4\accounting.

Network utilities are likely to find a niche because current software packages such as Lotus Development Corp.'s Notes and document management systems are expensive and "not so easy to use," said Stuart Dickerson, an MIS analyst at Oglethorpe Power Corp. in Atlanta. He added that a utility such as First Floor's could help fill a short-term file navigation and sharing need.

"The problem for end users is managing all the information they have access to," he said. The utility company had used Digital Equipment Corp.'s All-in-1, which employs an easy-to-use folder metaphor. Now the utility is using Novell, Inc.'s NetWare networks and would like to find a similarly robust workgroup setup.

"But they are so expensive now that we're looking for an interim workgroup solution until competition adds more products and lowers prices," Dickerson said.

Compounding the network file management problems are larger, cheaper hard disks that allow users to stockpile more files on their own PC and on the network, analysts said.

Users demand answers to GUI tool problems

By Thomas Hoffman
JERSEY CITY, N.J.

More than 200 Oracle Corp. users jammed a conference room here last week to lob questions about support and product features at representatives from six of the leading graphical user interface (GUI) front-end tool developers.

Most attendees viewed the session — dubbed "The Great GUI Day" — as an opportunity to familiarize themselves with the latest offerings from Oracle, Powersoft Corp., Microsoft Corp., Gupta Corp., Uniface Corp. and KnowledgeWare, Inc.

"It's a nascent market, so users are constantly trying to educate themselves on the tools that are available," said Guy Yasika, a marketing representative at Klein Management Systems, Inc. in Chestnut Ridge, N.Y., and co-chairman of the New Jersey Oracle Users Group.

Many developers in the crowd demanded answers to

the plethora of technical shortcomings they have been experiencing with their application tool kits. "Vendors still have to improve the ability of these systems to do large-scale application development. Most of the tools on the market are only suitable for creating small-scale systems," said Alice Rischert, former project manager at American Express Co.'s corporate human resources division in New York and now an independent consultant.

Poor performance

According to Rischert and other attendees, even the industry's top-selling client/server development suites continue to come up short in some technical areas. "We've suffered performance problems with [Powersoft's] PowerBuilder between remote locations," said Carol A. Behan, an assistant vice president of investment banking and institutional sales at Merrill Lynch & Co. in New York.

"Vendors still have to improve the ability of these systems to do large-scale application development."
— Alice Rischert, independent consultant

In fact, Behan, one of the many Oracle 7 users in attendance here, complained that none of the application tool sets she has tested — including PowerBuilder and

Microsoft's Visual Basic — seem capable of fully exploiting Oracle's PL/SQL programming language. Of the six vendors that pitched their wares here, "Gupta is probably the furthest ahead" with PL/SQL functionality, Behan said.

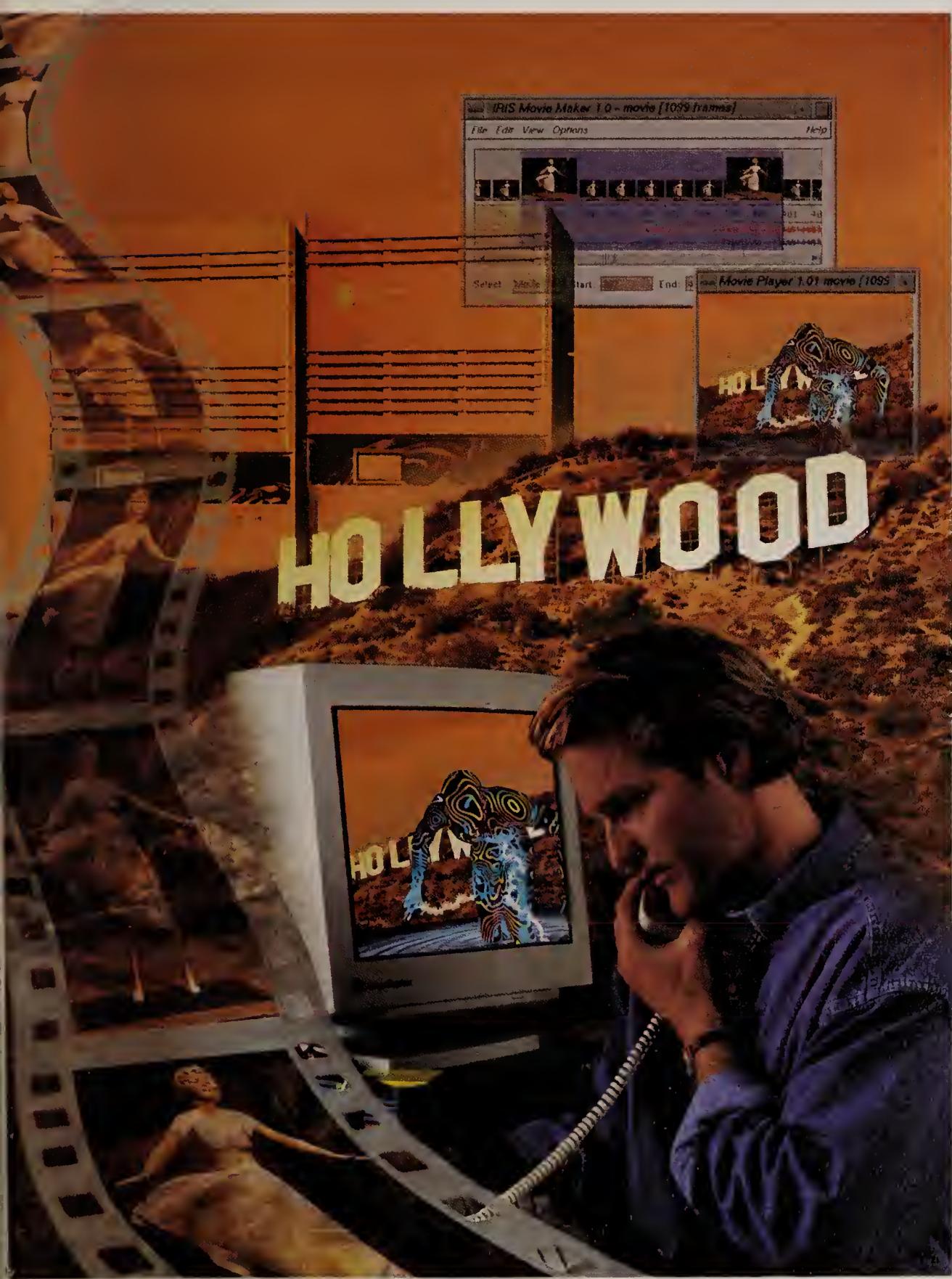
One Oracle user who is an information systems manager at a large pharmaceutical company, said he had a problem with Oracle Forms' inability to access other competitive databases. "Plus, Oracle

Forms 3.0, which most Oracle users are still using, is awfully stodgy," he said. "From a graphical standpoint, it's not pretty, and that's what these people want."

The key to success as a GUI programmer is clear, easy-to-read screens. See page 80.

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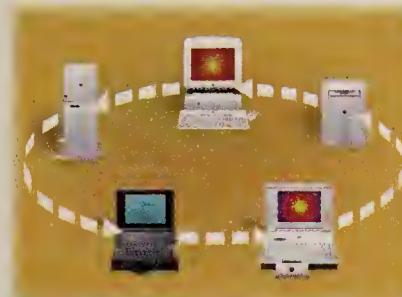
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Federal law may sanction use of 'engineer' title

By Julia King

Brent Milton thinks he many have found a way to call himself a software engineer without breaking the law.

Milton, a software engineer at Odin Systems, Inc. in Memphis, recommends that other computer professionals who

want to do the same should check out the U.S. Department of Labor's Directory of Occupational Titles. On page 43, the directory sanctions use of the title software engineer by anyone who, among other things, "researches, designs and develops com-

puter software systems."

Milton saw the listing while researching job descriptions for new employees. He was advised to use the federal directory by Tennessee's Employment Security Commission, where he went to post the job listings in June.



Meanwhile, across the state in Knoxville, George Phelps at Data Research and Applications, Inc., just purged all company marketing literature, business cards and stationery of any reference to software engineers or software engineering. He did so to comply with Tennessee's title law, which is similar to other title laws on the books in 45 states, prohibits computer professionals from calling themselves engineers [CW, May 30].

Tennessee's title law prevents anyone other than people educated and licensed in one of 36 engineering disciplines from using the words "engineer" or "engineering" to describe their occupation. Phelps' chief gripe is that software is not among the 36 sanctioned disciplines.

So Phelps, who now engineers software under the title "director of technology," has petitioned state representatives to change Tennessee's title act. He is also asking the state's Board of Architectural and Engineering Examiners to develop procedures whereby software engineers can be licensed the same as chemical or structural engineers.

"I have no problem with [the board] saying you have to be licensed," Phelps said. "I just hate people saying you can't use the title, and [then] there is also no way for you to get it."

What's in a name?

The five states that do not place restrictions on the engineer title are the following: Iowa, Nebraska, South Dakota, Washington and Wisconsin, according to a survey last year by the National Council of Examiners for Engineering and Surveying in Clemson, S.C.

Muddying the waters

Whether a federal government definition of a software engineer supersedes restrictions that states place on the title is unclear, said Paul Arne, an Atlanta attorney who specializes in computer law and an editor of the *Computer Law Association Bulletin*. "But the federal government's definition [of software engineers] is more consistent with reality," he said.

In the last few months, concern over the use of the engineer title has extended beyond Tennessee.

In Houston, Violet O'Brien, an information systems recruiter at The Whittaker Corp., said she now edits her clients' resumes, deleting references to software engineer or engineering.

"As I talk to people I'm recruiting, and just in conversation, I'm warning them that it's not really an OK thing," she said.

As long as the name-calling continues, Richard Rife, associate general counsel at Novell, Inc. in Orem, Utah, said the firm is advising its service technicians, called Certified NetWare Engineers, to use the acronym CNE rather than the word engineer. Field service people in several states have received "nasty letters" from state engineering boards, he said.

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*UnixWare test results from March 28, 1994 for a single Pentium™ processor Compaq® Proliant™ 2000 Model 5/66-4200A running OracleWare™ System-UnixWare Edition. Results \$433 tpsB based on 184.54 tpsB. Other results detailed in TPC-B Benchmark Report. All company/product names are trademarks and/or registered trademarks of their respective companies.

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COMPAQ

Multimedia, imaging next on Sun's agenda

By Cara A. Cunningham

After reporting record fiscal earnings of \$195.8 million recently, Sun Microsystems, Inc. is not about to rest on the success of its workstations. New strategic arenas for Sun include imaging and multimedia for both the corporate and home markets, said Scott McNealy, president and chief executive officer.

In an interview last week, McNealy attributed the company's record financials to a raft of new products that Sun introduced this spring. Those included the SPARCstation 5, faster Super-SPARC chips, Solaris 2.3 and the SPARC Storage Array.

Sun's results included \$1.4 billion in revenue for the quarter ended June 30,



CEO Scott McNealy
says multimedia is a key new market for Sun

joined forces to provide multimedia servers and Asynchronous Transfer Mode products for the home market. However,

an 11% increase over the previous year. Profits rolled in at \$78 million, a 2.3% increase over the year-earlier period. "I would say it was a very, very good year," McNealy said. The services sector is

"growing very nicely," he added, although he declined to give specifics.

Bite of the apple

Imaging is a growth area for Sun, he said, and the performance of the vendor's new 24-bit, low-end desktop machine "is going to take on Apple in the publishing market very aggressively."

Also new is the company's push into multimedia. Last month, Sun and Thomson Consumer Electronics SA

corporate customers will get first crack at those wares, McNealy said.

"This stuff is hard. It's going to take a while, and it will show up in corporations before it shows up in homes," he said. Likely candidates include real-time, two-way interactive video and multimedia workstations that sport a camera, keyboard, speaker, mouse, microphone and television-quality displays, McNealy added.

Sun has already pledged its support to the OpenDoc object technology from IBM, Novell and Apple. "But we will not be religious," McNealy says.

as Mosaic, E-mail, Notes and others are going to target the SPARC/Solaris environment," the 39-year-old CEO said.

Further, he said, Sun will play on both sides of the object war. The company has already pledged its support to the OpenDoc object technology from IBM, Novell, Inc. and Apple Computer, Inc. "But we will not be religious," he stressed. Sun will ensure its objects also "can speak" Object Linking and Embedding, Microsoft Corp.'s rival object specification.

Cunningham is a Paris correspondent at the IDG News Service.

Sun's new hardware chief sets priorities

J. Phillip Samper was named president of Sun Microsystems Computer Corp. and corporate executive officer of Sun Microsystems, Inc. in February. A former Eastman Kodak Co. executive and former chief executive officer of Kinder-Care Learning Centers, Inc., Samper had been a member of Sun's board of directors for three years.

In the first few months of his job, Samper has been evaluating Sun Microsystems Computer's resources and business focus and defining how Sun's divisions can present one "face" to customers. He met recently with Computerworld Editor Paul Gillin and Jean S. Bozman, senior editor of open systems.

Q: You got off to a very quick start here.

A: There wasn't very much choice. The tidal wave was coming. You either swim or jump on your board and try to surf. [It's] the way the industry is moving, the way the company has to move. The way I spend my 16 hours a day, seven days a week of activity [is that] when I'm traveling in a plane, I'm on the phone. If I'm in the car, I'm on the phone. That's just the way it is.

Q: What are your top priorities?

A: One of the priorities is to get myself familiar with Sun. As a member of the board, I had some knowledge of Sun, but there's a big difference between being a member of the board of directors and being a full-time employee.

Secondly, I wanted to identify where I felt we had to put the emphasis from a tactical as well as a strategic point of view. [I wanted] to get my new team together and have us work to identify what those items are. One of them is to try and develop an inventory of our technology assets, to make certain that we are focusing on the opportunities.

Q: How can Sun present one face to the customer?

A: That has been my aim — to try to simplify the customer view. And we have had a number of conversations at the management level on it. What we have agreed to is from a customer point of view: If it's a Sun Microsystems Computer customer, Sun Microsystems Computer takes the lead. It's our customer, and the others provide the support.

Q: Since this is such a speed-and-feed oriented market, how important is it to you to have the fastest processor — relative to having the best software support and customer service?

A: Of course, I think it depends on the marketplace. Looking at the technical marketplace with solution-critical speed needs, it's very important. But I think the software and ser-

vice element of the package is extremely important. And that would include, of course, integration. It would include a knowledgeable sales force. It would include the ability of every element of Sun to communicate with the users and understand their needs.

Q: The issue of providing good customer service and support to users continues to linger, particularly with respect to third-party providers. Is it possible that could change?

A: We're investing more money in this fiscal year [on] training, [putting] more people on the street — our people who assist the third-party suppliers. We're hiring more people in sales and certain areas of marketing.

Q: Will you continue to have third-party service providers?

A: Absolutely. I think the issue is how do we more effectively support and work with the third parties. There are a couple of elements to that. One is just straight service. The other one is integration. Therefore, we're getting much closer to organizations like Andersen Consulting and so on. The customer needs more support, and we have to be smart enough to recognize their needs and then work with the third-party suppliers so we can come forward to the customer as a team.

Q: What about Sun's emphasis on the commercial marketplace?

A: Sun has been in the commercial marketplace a lot longer than people have given it credit for. It's dominated the trading floor game around the world. But I must stress we are not pulling away from the technical marketplace. And I have said we're probably going to have to put more emphasis on the technical marketplace this fiscal year than we did last year.

Q: Sun's reputation has always been that of the innovator. Do you think it's possible to be seen as being as innovative as you were in the past, given that there is so much competition right now?

A: I think so. I think, too, that there has been a great deal of talk about Sun's position in the market, and yet I look at the

numbers ... and I see Sun continuing to play the lead role in all of those marketplaces. I guess I don't see the situation [as being] as negative as some members of the press. I look at the same data they do, and I go out and talk to customers. What I hear is everybody wants us to do better. As do I, by the way.

Q: What about Sun's image in the marketplace, particularly with respect to PCs?

A: I think Sun's image in the marketplace as a workstation and server [company] is an image that can be built upon and will provide good business well into the future.... The interface of our servers with PCs in a heterogeneous environment is something we live with today, and we want to. That's another opportunity for us.

Q: Is selling large Unix servers one of the main ways you're going to boost profitability?

A: Well, servers are a critical profit generator and will continue to be. Servers are growing, and they are growing at a good rate. Margin is always going to be a problem for this industry, so we have to find ways to be more efficient. I'm going after cost.

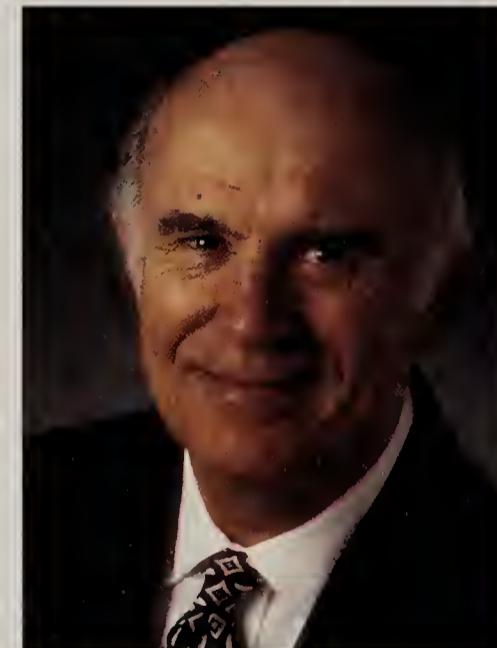
Q: You have nearly 13,000 employees. Would you consider a layoff?

A: We have no policy against it.

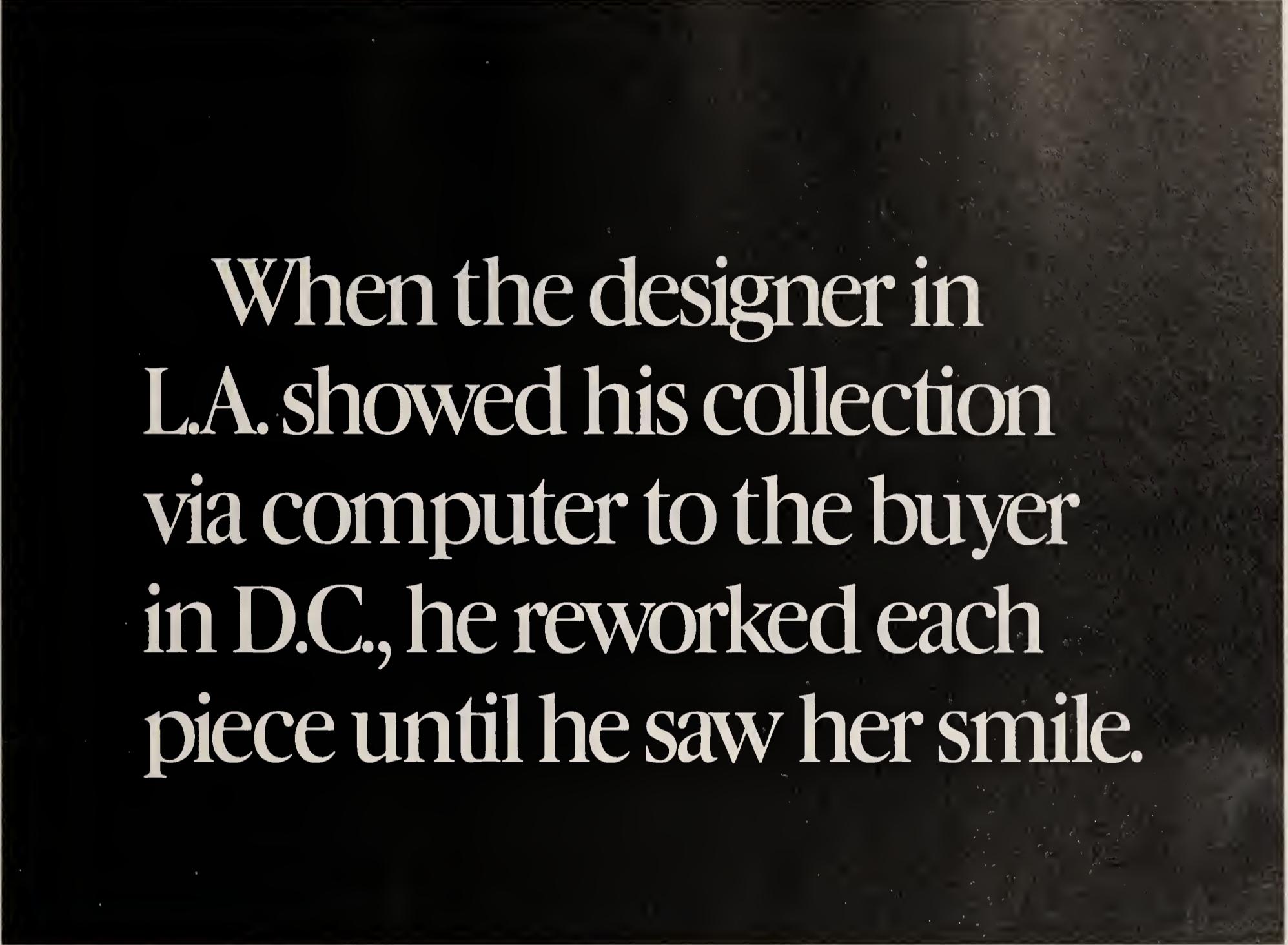
Q: Are you hiring? Are you going to increase staff this year?

A: We're hiring in some areas and declining in others.

Shortly after the interview, Sun confirmed it had eliminated about 130 positions at Sun Microsystems Computer, including 30 in marketing. However, new jobs were posted for other marketing positions at the hardware division, a Sun spokesman said. The move, which was not termed a layoff because overall head count was not reduced, came several weeks after a reorganization at SunSoft, Inc., Sun's software subsidiary.



J. Phillip Samper, president of Sun's hardware subsidiary, says he is staffing up sales and marketing in the financial, manufacturing and government segments



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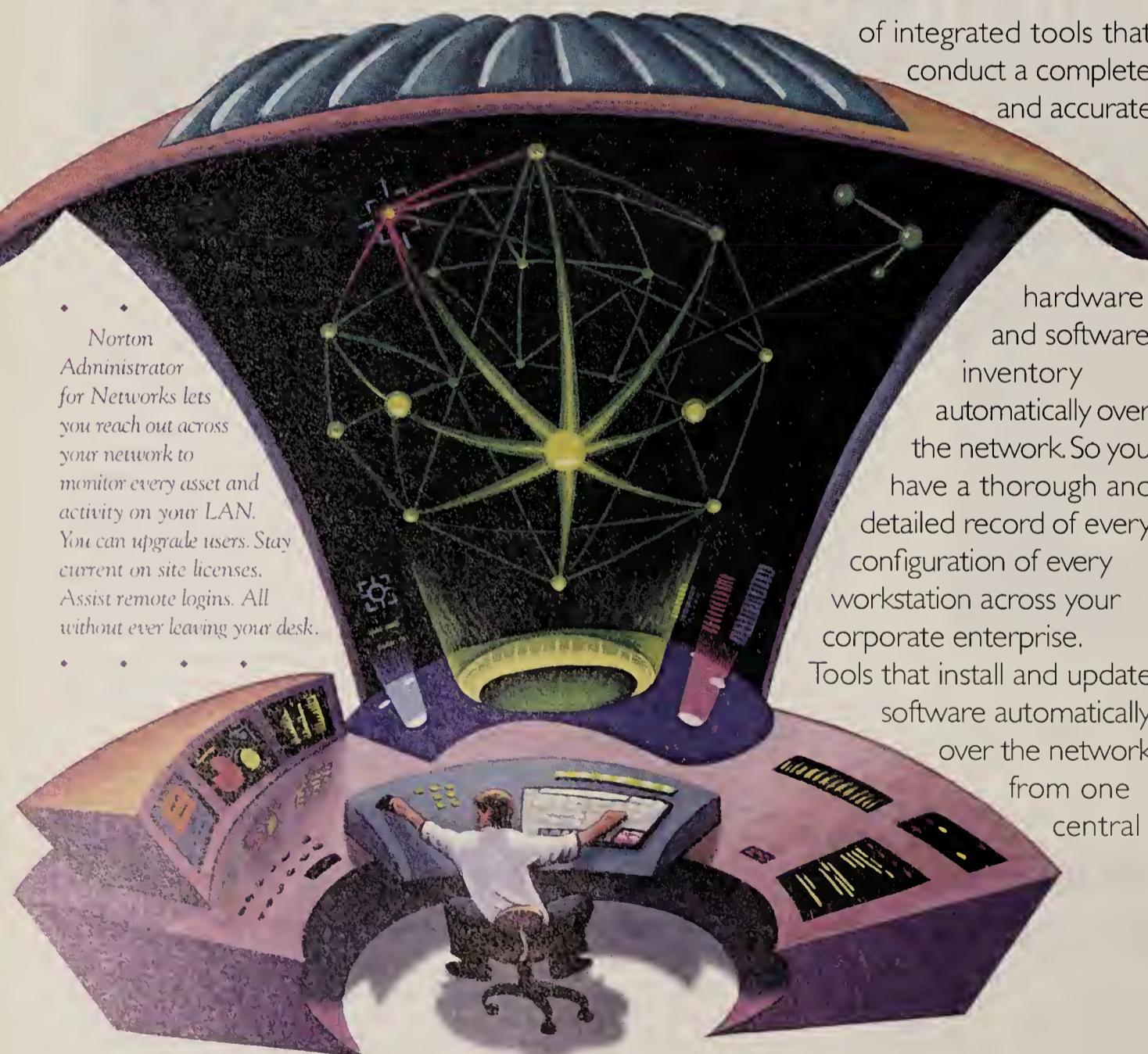
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So an antivirus intervention can automatically trigger a backup file restoration. Metering on one LAN

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NAN can also help protect your network from being infiltrated by pirated applications brought into your enterprise by users.

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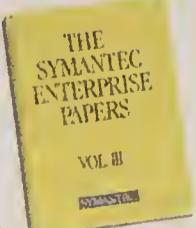
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Computer Industry

Briefs

Cray losses mount

Cray Computer Corp. reported a loss of \$11.2 million last week for the second quarter, which ended June 30. The loss nearly equals the \$11.8 million loss reported for the same period last year. Officials said restrictions from the spin-off agreement with Cray Research, Inc. expired last week, allowing it to pursue new strategic relationships.

Wang rebounds

Wang Laboratories, Inc. posted a profitable fourth quarter and its first profitable year since 1988 for its past fiscal year, which ended June 30. Quarterly revenue was \$207.6 million, compared with a \$10.4 million loss a year ago. Wang has also laid off 430 employees this year.

Parallan's peril

Parallan Computer, Inc. posted a \$3.6 million loss for its second quarter, which ended June 30. The server and network software supplier expects to post losses for the next several quarters due to the loss of funding from the IBM PC Co.

SHORT TAKES Switching system developer Chipcom Corp. in Southboro, Mass., and National Semiconductor Corp. in Santa Clara, Calif., are developing 100M bit/sec. technology for "fast" Ethernet hubs that will support database, design and multimedia applications. . . . Multimedia product supplier Media Vision has filed for Chapter 11 bankruptcy protection to complete a restructuring of the company. . . . Stratus Computer, Inc. in Marlboro, Mass., last week reported a \$17.4 million profit for its second quarter, which ended July 3. . . . Franz, Inc. in Berkeley, Calif., plans to acquire the technology assets of development systems supplier Lucid, Inc. in Menlo Park, Calif. Franz will distribute Lucid's software development tools product line.

Growing pains hit client/server arena

Vendors struggle in overcrowded market, upgrade products to fight back

By Rosemary Cafasso and Melinda-Carol Ballou

Market transitions are killers, and nowhere is that more evident right now than in the client/server tools arena.

With the notable exception of Powersoft Corp., some of the biggest names in the client/server tools business are showing clear signs of growing pains as they fine-tune their products. Many of the tools vendors are bringing out more scalable and fully featured versions of their wares in the midst of cutthroat competition for the corporate audience.

This is apparently taking its toll. KnowledgeWare, Inc., for example, is cutting 25% of its 900-plus work force, a step it announced in late July. The company said the move was brought on by poor financial results in its fourth quarter, which ended June 30. Final results for the quarter are expected this month.

Last week, Gupta Corp. announced an \$11.5 million net loss for its second quarter; revenue came in at \$10.3 million. In comparison, it reported \$13.5 million in reve-



nue and a profit of \$892,000 in the same quarter last year.

"There are a tremendous amount of strong players and some very significant companies are going to do very badly even as the market grows because of overcrowding," said Curt Monash, president of Monash Information Services in New York. "The market must consolidate."

Sale setbacks

Even the bigger players have taken some missteps. For example, Richard Hanlon, an outside consultant handling investor relations at Gupta, said the company's second-quarter results can be explained in part by sales that came in "dramatically lower than the company had expected and expenses [that] were dramatically higher."

One key factor in the sales results can be traced back to Gupta's previewing of SQLWindows Release 5.0 several weeks before it was ready to ship, thus bringing future sales of its existing product to a halt, Hanlon said.

KnowledgeWare first experienced finan-

cial trouble more than a year ago, and analysts said the vendor must more effectively target its customers if it hopes to regain and retain profitability.

"We had a company that had a very healthy user base" with its Application Development Workbench, said Ed Aclay, an analyst at International Data Corp. in Framingham, Mass. "That base has continuously been declining, and while they have made some progress with sales for other products, it hasn't been enough to fill the gap."

Even Powersoft, which last week reported a whopping \$32.6 million in sales for the second quarter — up from \$11.6 million in the same quarter last year — expressed caution for the upcoming quarter.

"Everyone knows [PowerBuilder 4.0] is coming and, as always, when there's a new release, there's always the danger that people will defer their buying," said Mitchell Kertzman, Powersoft chairman.

"The market must consolidate."
— Curt Monash
president
Monash Information Services

Seagate adds Palindrome to portfolio

By Mary Brandel

A patchwork quilt might first come to mind when you look at Seagate Technologies, Inc.'s acquisitions since the spring.

Since May, the \$3.5 billion disk drive and storage components maker has bought a report writer firm and 25% of a speech recognition company (see chart).

Just last week, the target was Palindrome Corp. in Naperville, Ill., which makes storage management software for LANs. And Seagate promised there will be more acquisitions to come.

"At first blush, there's not necessarily a lot of synergy associated with the companies," said Crawford Delprete, an analyst at International Data Corp. in Framingham, Mass. "But if you drill down, especially considering [Palindrome], things start coming into focus."

Futuristic plans

The bottom line is Seagate wants to build a \$1 billion software business by 1999.

The reason: "Disk drive makers operate under extremely thin margins," said Tom Koffman, an analyst at Dean Witter Reynolds in New York. "Software generally has fat margins, so [the acquisitions] could complement the business model."

Even though storage demand is insatiable, revenue growth at Seagate is 10% to 15% due to price declines, said Steven Luc-

zo, senior vice president of corporate development. "That's good growth on \$3.5 billion," he said, "but it's not [the chief executive officer's] mode of, 'I want to build new businesses.'"

Tight focus

And rather than being far-flung, Luczo said, the acquisitions are focused in two areas: intelligent interfaces and intelligent data storage.

"We're a data management company focused on manipulating, moving and analyzing data" to increase network efficiency, he said.

With the addition of Palindrome, Luczo said, Seagate hopes to make storage more intelligent, where "data is stored in data sets that are related to one another and with pointers so you know where the content is stored."

"You're seeing a strategy slowly unfold," said Michael Peterson, an analyst at Peripheral Strategies, Inc. in Santa Barbara, Calif., comparing Seagate's plan with those of "successful system network or storage management conglomerates" such as Legend Corp., Sterling Software, Inc. and OpenVision Technologies. "The business model is one of acquiring core technologies that complement each other to build an overall integrated architecture and strategy. There's no reason why Seagate can't take this business model and run with it."

Spending spree

Seagate plans to build a \$1 billion software company through acquisitions made this year

COMPANY	BUSINESS	THE DEAL
Crystal Computer Services, Inc. Vancouver, B.C.	Windows-based report writers	\$18.6 million*
Dragon Systems, Inc. Newton, Mass.	Speech recognition technology	25% ownership
Palindrome Corp. Naperville, Ill.	LAN tape backup software	\$69 million

*Stock transaction

Source: Seagate Technology, Inc., Scotts Valley, Calif.

The purchases may appear at first to be risky endeavors that the cash-flush company does not seem to need. But analysts said the company is taking the right approach — namely, a cautious one.

So far, the acquired companies are small, under \$70 million, and they will continue operating as before with management reporting to Seagate. "We're not trying to pretend we have management expertise in software," Luczo said.

Still, said Todd Bakar, an analyst at Hambrecht & Quist, Inc. in San Francisco, "We're taking something of a wait-and-see approach to see how they'll integrate all these acquisitions."

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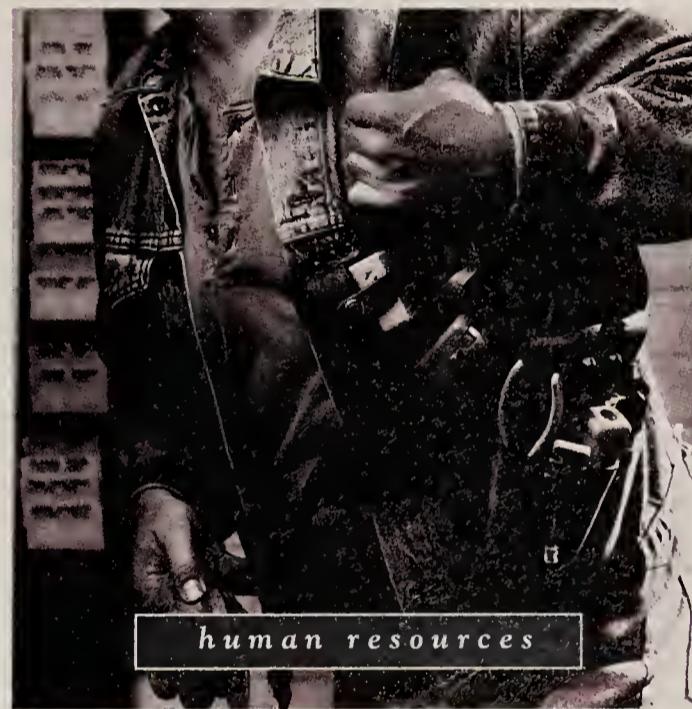
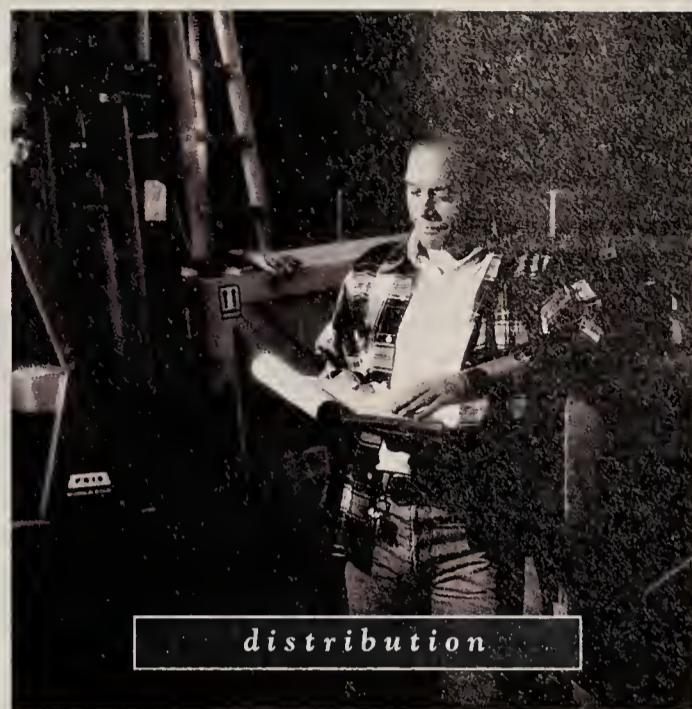
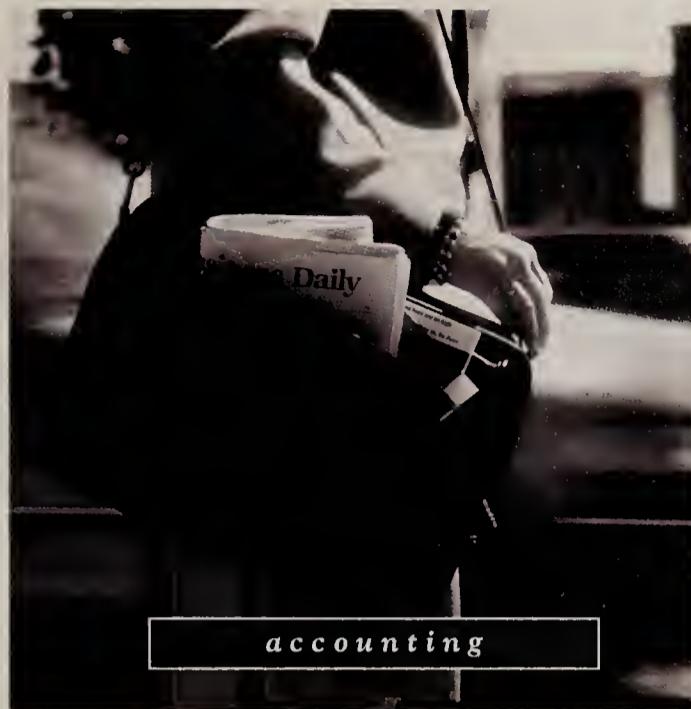
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LAWSON
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Obituary

"It is with mixed emotions that we announce that the 'death-of-the-mainframe' reports croaked last week following a spirited and protracted fight with reality.

"The final nail in the coffin of the PC weenies who authored the reports was pounded in by IBM, which announced quarterly results that smartly exceeded expectations due to healthy mainframe sales. In addition, IBM announced it will sell every hunk of big iron it can churn out for the foreseeable future.

"Services and celebrations will be held at intelligently managed corporate IS sites."

Yes, it is true. While it certainly is not destined to be a long-term trend, corporations are greeting the general economic recovery by buying mainframes again. The installed base of mainframe MIPS is actually increasing.

How can that be? Haven't corporate sites heard about client/server and distributed computing?

The answer is yes, they have, and that is actually one factor fueling this minisurge in mainframe computing. As has been suspected in some quarters, the client/server environment is still not up to the task of handling most mission-critical applications due to some "minor" deficiencies such as system security, data management, backup and so forth.

So while this promising environment develops, IS managers are going on with the business of information management with the best tools they have, which in some cases are still bought at the mainframe store.

Other factors are pushing this temporary mainframe revival. Users are finding some interesting applications of mainframe technology right in the midst of the distributed PC and LAN-based environment.

For example, as we reported last week in our Large Systems section, some users are discovering that mainframes are coming in very handy for backing up data generated by Unix LANs and PC LANs. It seems the discipline and characteristics of the mainframe environment—things such as automation, security and reliability—come in very handy in the relatively undisciplined client/server world.

In other words, the mainframe is actually being used as a card-carrying member of the client/server revolution, which will in fact replace most mainframes in the future.

This whole topic wouldn't be worth writing about if not for all the damage done by the general overselling of distributed computing, which induced some senior executives to demand a halt to the expansion of mainframe MIPS. Perhaps now such people will understand that revolutions in information technology really don't occur. There are no magic bullets to information conundrums; they simply take time to resolve.

But at least, having penned this obit, I won't have to write about this subject here again.



Bill Laberis

Bill Laberis, *Editor in Chief*
Internet: blaberis@cw.com



Rich Tennant is on sabbatical. This is one of his classic cartoons from 1988.

Letters to the editor

Who's to blame?

Congratulations to Phillip Zakas and his team on a truly wonderful job of solving the problems in his network ["Virus!", CW, July 11].

But here's the *real* bun-froster: Who *caused* it? Who infected your system? And who will pay for the costs incurred by your organization in terms of lost productivity and loss of valuable files?

Go after the perpetrators, make public spectacles of them and make them pay back the organization for its losses. Viruses are not a game.

Alan Falk
Cupertino, Calif.

Not your E-mail

I can't believe some of the comments on electronic-mail privacy that have wasted publication space, let alone the talk of passing legislation to support something so ridiculous.

Tell these people to get a life! E-mail is a business tool to aid employee communication on business-related matters. If people have nonwork-related things to discuss, they should do it elsewhere.

These same people probably think they have the right to store private letters on company storage systems (which they no doubt created using the company's hardware and software) and that the system administrator has no right to see what these files are while trying to control space wasted by unneeded files.

Steve Biese
Onley, Md.

That's Daniel

Alan Radding's excellent overview of Internet front-end software ["No easy ride," CW, June 20] incorrectly identifies Bruce Dern as author of *The Internet Guide for New Users*. Perhaps Radding was watching the television screen instead of his monitor — Bruce Dern is an actor.

Daniel Dern — that's me — is the noted (in my humble opinion) Internet author, analyst, pundit and answer guy. I hope people are beginning to ask Bruce Dern if he's related to me.

Daniel Dern
Newton, Mass.

Consultant picture used broad brush

Just when you think "consultant bashing" is no longer in vogue, *Computerworld* publishes "Ability to baffle consulting" [CW, June 20]. Tim Lynch's parochial views swipe at two sectors of the IS community — the consulting industry and senior IS managers — and are not appreciated (or shared) by either.

First, Lynch ridicules the whole consulting industry as inexperienced, unqualified, greedy people interested only in undermining their clients' IS organizations to sustain their own profit motives through confusion and disarray. Why don't we read about dozens of

consultancies going out of business every week due to this proliferation of unethical behavior?

IS professionals dedicated to becoming true consultants fill many IS needs. Consultants know that they are only as good as their last engagement. That pushes them to strive for excellence and constantly demonstrate their proficiency — knowing their reputations are at stake.

Second, Lynch takes a swipe at IS management as nothing more than in-house retirees too illiterate to understand consultants. It has not been uncommon for our staff to undergo drug testing, criminal background checks and credit checks when interviewing with a potential client. I'm just not aware of any "sight unseen" contracts.

There are just as many qualified consultants on the public market as "private" employees working for the Fortune 1,000. Though the same code of ethics is not followed by everyone, it is unfair to libel the entire industry in this manner.

David J. Feher
Dallas



Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor in Chief, Computerworld, P.O. Box 9171, 375 Chituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; MCI Mail: 279-6273; Internet: letters@cw.com. Please include a phone number for verification.

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The Hierarchy of (Computing) Needs

Jerrold M. Grochow

Many of us remember Maslow's Hierarchy of Needs from Psych 101: You need food before you worry about shelter; you need shelter before you worry about work; you need work before you worry about "self-actualizing." (Yes, I know there was something about sex in there, but this is a family magazine.) The Hierarchy of Needs has been found to be an effective device for analyzing (and predicting) behavior in a wide variety of situations.

Some of us road warriors of the personal computing age seem to be living by a new hierarchy of needs. First we need computing power, then we can worry about connectivity; with connectivity, we start to think about database access; once we have access, we try to create information; and as we create information, we protect it with security.

Without access to computing power, nothing else matters. In today's PC world, this means an Intel 486-based processor with a minimum of 8M bytes of memory.

Access to all, for all

Once we have computing power, we need to be connected to electronic mail, news feeds, bulletin boards, mainframes and application servers.

Most of the complaints our network services

group deals with have to do with lack of connectivity: "The gateway to the mainframe is down," "The mail server isn't responding" or "I don't get an answer when I dial in." Clearly, this is a tough part of the hierarchy to be at.

With connectivity established, we quickly focus on data. We use connected computers to access a wide variety of data — corporate databases, research services, project archives and so on. After all, that's why we needed the computers in the first place, isn't it?

We need more than database access; we need information access. In order to effectively use the data, we need the tools to organize and access that data: inquiry, statistical, analytical and predictive programs — even expert systems and neural networks.

Finally, once we have the computing power connected to the databases we can effectively access, we begin to worry about security. Is the information we use and generate properly secured? Can the right people gain the right kind of access? As we create the new corporate "information assets," can we protect them the



Without access to computing power, nothing else matters.

same way that we protect other corporate assets?

The interesting thing about this hierarchy of needs is that our behavior quite naturally implies its existence. People without adequate computing power don't really worry about connectivity. People with connectivity problems don't worry much about databases. People who have finally gained information access then start worrying about security. You have to arrive at each level before you worry about problems at the higher ones.

So the next time you hear your staff members complaining, remember where they are on the Hierarchy of (Computing) Needs.

Nobody really wants to be on the first few levels. They would rather focus on how to use the computer to create and process information pertinent to their businesses. And it's up to you to help them get there.

Grochow is chief technology officer at American Management Systems, Inc. He can be reached at jerry.grochow@amsine.com.

Are your IS solutions fashionable?

Max D. Hopper

Stop, hold everything! This just in: Client/server is out. If you haven't yet scrapped your frumpy old mainframes and slathered your corporate information technology landscape with client/server systems, don't. Or if you have done so but still haven't quite sorted out the integration problems to achieve the kind of reliability and management control you used to take for granted, don't bother. Even if you're past those hurdles (be honest now) but just can't seem to make client/server "solutions" fit those core business problems the old mainframes handled so deftly, stop trying.

If you were one of those plodders who doubted client/server computing was a universal panacea or were never even really clear on what the term meant, don't worry. Client/server is passe. The latest buzz in the halls of haute tech is that massively parallel processors are in. They're the next hot item in hardware and the cool new computing strategy that will be the salvation of information systems.

Pardon the irony. If my tongue appears to be

This is the kind of techno-bias that shapes industry perceptions of what constitutes "good" or "bad" IS practices.



"bad" IS practices and obscures what current practices really are. It elevates certain information technology tools and techniques to omnipotence and exiles others to obsolescence.

I have no ax to grind with information technology innovation in general or client/server approaches in particular. American Airlines' Sabre Group is among the earliest to evaluate and adopt those new tools that promise genu-

ine solutions. Indeed, we have more broadly implemented and more thoroughly integrated client/server systems enterprise-wide than most companies.

But let's keep *all* new information technology tools in perspective. Each has its strengths and valid applications for certain business processes. Let's not allow ourselves to be convinced that any one technology, no matter how popular or how potent, will be our deliverance.

The march of technology is not a fashion show. Yet given the bandwagon rush of vendors to promote the latest information technology trend and the euphoric media hype that dismisses its limitations, it's easy to conclude that "one size fits all" and "everyone's" wearing it, or should be.

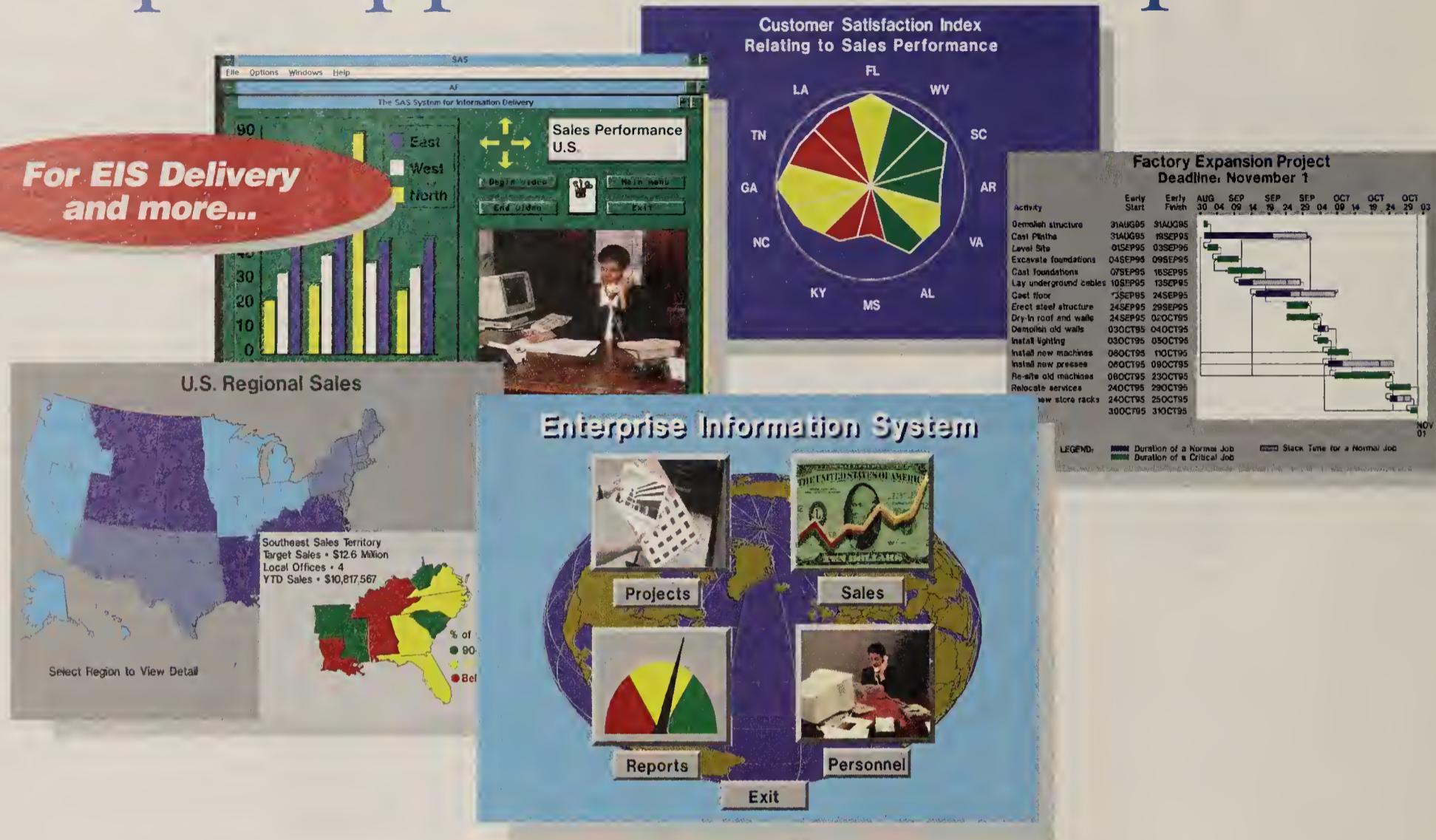
One can easily get the notion, for example, that implementing client/server systems on an enterprise-wide basis is less costly and less complex than traditional legacy system approaches and that client/server enables shorter application development times. While true in some cases, general experience would contradict this for major projects.

So get real. Recognize that the best solution for our enterprise computing needs is a broad mix of tools and strategies; each doing what it does best, working together in an integrated environment of cooperative processing.

Hopper is chairman of AMR Corp.'s The Sabre Group.

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Users reap benefits of vendor service/support battle

By Jaikumar Vijayan

With product differentiators fading fast in an industry that most observers agree is becoming rapidly commoditized, desktop users are beginning to get an increasing level of service and support as vendors try to outdo one another.

In the past few weeks alone, for instance, several desktop vendors — including Dell Computer Corp., Gateway 2000, Inc. and Zenith Data Systems — joined a growing list of companies offering three-year warranties. These manufacturers also offer service options ranging from next-business-day service to on-site agreements and remote diagnostics.

Another option that is becoming popular is a so-called self-maintainer contract. With this, the customer gets maintenance training from the vendor. Typically, the vendor pays the user each time a failure occurs. Dell, for example, pays customers \$75 per incident. Though it involves more in-house effort than the traditional route of farming the computers out to a vendor or a third party, users can save money.

A desktop trend

Often coming at little or no extra cost to the user, these service and support offerings are indicative of a growing trend in the desktop industry, analysts said.

"The difference, really, is that customers today have an option to choose the

level and kind of support they want and pay for only what they think they can afford," said Jim Marra, manager of networking at Brigham and Women's Hospital in Boston.

"There isn't all that much to differentiate vendors these days, apart from their service and support," said Richard Zwetchkenbaum, an analyst at International Data Corp. in Framingham, Mass.



"The total cost of ownership of a PC is becoming important for desktop users," he added. Vendors have begun to focus on this aspect by offering users a slew of options that allow them to mix and match their service and support requirements with their budgets.

Marra is one user who is starting to leverage the flexibility that vendors are increasingly building into their contracts.

Under a self-maintainer program with Compaq Computer Corp., the hospital's primary vendor, Marra's support team has received training from Compaq and currently does its own hardware main-

tenance and software support. In certain cases, the hospital is reimbursed for labor by Compaq on a per-incident basis. Parts replacement and support were previously handled by a service provider.

"It's worked pretty well for us so far," Marra said. "We are in control of parts availability, we have our own dedicated task force, and we do save money."

Freedom to choose

While self-maintainer programs are still fairly rare in the desktop industry, several vendors have built in multiple layers of service and support, leaving it to the user to choose the appropriate level of service. Typically, these warranties include the following:

- Basic three-year limited coverage.
- Option to upgrade to on-site service in years 2 and 3 for a fee.
- Next-business-day, on-site service in the first year.
- Twenty-four-hour, seven-day, toll-free technical assistance.
- Optional, guaranteed four-hour response time.

"There is a growing emphasis on service and support in the desktop industry. It has become one of the biggest discriminators in the

purchasing decision," said Steve Smith, Dell's director of technical support.

Dell, which handles approximately 12,000 to 15,000 support-related calls a day, offers its users a mix and match of service options, including self-maintainer programs. Dell also provides a parts-only contract, under which it replaces

any part or product during the coverage period without charge.

Because vendors are increasingly preinstalling software on their systems, they are also expected to offer at least a minimum amount of software support, according to Smith. "There is an implied level of service that a customer has come to expect from a vendor," he said.

Call for help

Diagsoft, Inc., a Scotts Valley, Calif., manufacturer of diagnostic software for PC systems, has announced an Electronic Technical Support Center (ETSC) that provides users with on-line access to specially trained support professionals. Using its QAPlus/Win software package and a modem, users can dial in to ETSC for about \$2 a minute. Information about the user's system is automatically downloaded into ETSC systems, and questions relating to basic software or hardware problems are resolved on-line.

Typically, the support includes features such as enhanced call-routing procedures that improve service efficiency and effectiveness, according to Richard Bernard, director of customer services business management at Zenith Data. For example, repeat callers to Zenith Data's support lines are directed to second-tier customer and technical assistance, while technical calls are escalated to product support, engineering and quality groups.

IBM sees settlement helping OS/2

Terms may trigger system sales

By Ed Scannell
and Jaikumar Vijayan

■ Microsoft Corp.'s settlement with the U.S. Department of Justice may finally enable OS/2 to take a bigger bite out of Windows' market share. At least that is the hope of IBM's Personal Software Products unit.

The unit is scheduled to deliver a 4M-byte version of OS/2 — something on the wish lists of OEMs and users for years — in September. That delivery, coupled with generous licensing terms, makes IBM executives believe that their chances for winning bundling deals have improved considerably.

Sales of OS/2 2.1 have remained steady since last year, bringing the installed base of the 2.x series to just over 5 million. But Windows continues to outsell OS/2 at a 10-1 ratio; Windows 3.x sales topped the 50 million mark in late May.

IBM executives are clearly hoping to turn those figures around. "As Microsoft offers these OEMs a better volume deal [under new one-year contracts], we'll

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be right there to offer them a better deal," said Lee Reiswig, president of the Personal Software Products unit.

The unit has already approached several OEMs in the past few weeks with aggressive licensing agreements for OS/2 that company officials are confident will land them some much-needed exclusive bundling deals. Company officials claimed they were met with a majority of favorable responses.

A bundle of promise

The outlook on bundling deals does seem to be brightening for the unit. For instance, Wyse Technology, Inc. will soon start bundling a variety of OS/2 versions, including OS/2 for SMP, on many of its PCs, servers and multiprocessor systems. Compaq Computer Corp. this week will start making OS/2 available as part of its SmartStart program.

"With this deal we think we can offer better cost and performance advantages to what we believe is a growing base of OS/2 users," said Jeff McNaught, director of marketing and management at Wyse's Systems Division.

The situation overseas also appears to be improving somewhat. IBM expects to announce a deal with Munich, Germany-based Escom AG, the country's second-

largest PC maker, to bundle OS/2 on all of the 500,000 PCs the company expects to ship next year.

Similarly, Hong Kong manufacturer Genon Technology has signed a three-year deal that allows it to ship OS/2, OS/2 for Windows and PC DOS 6.3 on all of its PCs.

Not enough

Some users, however, were doubtful that the Microsoft settlement would make much of a difference for OS/2. While many have praised its technical features, OS/2 still has few 32-bit applications that truly exploit those features.

"People are purchasing best-of-breed operating systems. OS/2 has been praised as a superior [operating system], but for some reason users have not moved toward it," said David Pinkard, a technical consultant at Mallinckrodt Medical, Inc. in St. Louis.

While Pinkard and some other users welcome the 4M-byte OS/2, Pinkard said much of his decision hinges on how capable the product turns out to be compared with Microsoft's 32-bit Chicago operating system.

But while the settlement with the Justice Department has eliminated a roadblock or two, it also means IBM will have fewer excuses to fall back on if it fails to land any significant deals.

"In some ways there may be a little more pressure on us. We have to make it work," said Wally Casey, marketing director at the IBM unit.

Borland turns up database heat with Paradox 5.0

By William Brandel

■ In an effort to counter the inroads that Microsoft Corp. has made in the PC database market, Borland International, Inc. is preparing to launch a new version of its Paradox for Windows database.

Version 5.0 represents a much-enhanced upgrade from Paradox for Windows 4.5, analysts and beta testers said. The new version runs noticeably faster, according to Michael Lant, president of Avalon Associates, a database consultancy in Toronto. Also, Version 5.0 is said to be easier to use for programmers and end users.

Version 5.0 is a big step forward for Borland because it supports a number of de facto industry standards in the Windows application market, said Nicole Roth, an analyst at International Data Corp. in Framingham, Mass. The update includes support for SQL, Microsoft's Open Database Connectivity (ODBC) and Object Linking and Embedding (OLE) 2.0.

For example, Borland used its not-yet-delivered Object Component Framework classes and libraries to install a bevy of OLE 2.0 functions in the new version,

which will also support OLE 2.0 as a client and server.

As a result, users can embed a table from Paradox in a word processor that supports similar OLE 2.0 functions. Alternatively, an object from another application can be embedded in Paradox. By comparison, Microsoft's Access 2.0 database supports OLE 2.0 only as a server.

Other features make the product more appealing to end users, Roth said. Currently, 20% of Paradox's users are end users, she said. It is crucial that Paradox reach beyond this base as it faces strong

competition from Access 2.0, which has made inroads with end users by offering easy-to-use prebuilt database functions called "Wizards."

Borland is countering Wizards with "Coaches," which are interactive tutors (see box), and "Experts," which are used to perform basic database functions such as using mailing labels, creating new forms and generating reports from the database.

"The Coaches and Experts make it much easier for the novice database user," said Bob Davis, a developer and of-

ficer at the San Diego Police Department. "Using these, I am much more confident in letting a nonpower user develop their own database."

The product also includes a number of new features for programmers, Lant said. For example, Version 5.0 includes a new IAdapter, which makes Borland's Integrated Database Application Programming Interface compatible with ODBC-based applications. This is significant, Lant said, because it makes Paradox a compatible front end for popular ODBC-based back-end servers such as Lotus Development Corp.'s Notes.

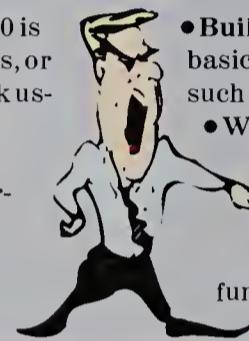
SQL transfer

"One nice feature for corporate programmers is the local SQL," he said. This feature enables the programmer to write SQL code against local Paradox tables.

"If you write your SQL code in a local table, you can then take it unchanged into whatever client/server back end you are working with," Lant said. "All you have to do to scale up is point to the right tables."

Paradox for Windows 5.0 is expected to ship at the end of the summer, according to Borland sources. Pricing has not yet been established.

Ask the Coach



A key feature in Paradox 5.0 is what Borland calls Coaches, or interactive tutors that walk users through the following categories:

- **Paradox Basics:** An overview of Paradox functions such as opening files and changing object properties.

- **Building a Database:** Features basic database and table functions such as creating a table.

- **Working with Tables:** Includes viewing and editing records.

- **Queries, Forms and Reports:** Covers steps required to perform basic functions such as printing a report.

New Products

Plextor Corp. has announced the 4plex PX-43CH, an internal quad-speed CD-ROM drive housed in an industry-standard half-height 5 1/4-in. form factor.

According to the Santa Clara, Calif., firm, the 4plex PX-43CH provides users with video, graphics and images that are smoother and more natural than lower-speed drives and can be easily mounted in multimedia PCs.

The 4plex PX-43CH can spin discs at four times the original CD-ROM drive standard. The product has a 600K byte/sec. data transfer rate, a 200 msec random-access speed and a 1M-byte buffer.

An optional SCSI interface lets users daisy-chain up to seven peripherals. An external configuration, 4plex PX-45CH, is also available and can be used in PC and Macintosh environments.

Prices start at \$549.

► **Plextor**
(408) 980-1838

Four Corners Development Partnership has introduced SuperConductor, software that lets users organize computers and information around people rather than applications.

According to the Sherman Oaks, Calif., company, records created in the central People Screen receive all information added to the record later and store it in the subsequent individual dependent screens.

Related screens for each individual's record include Address, Telephones, Documents, Classifications, Schedules

and Members.

Users can write a letter by creating a space for the addressee and calling up the preferred word processing application on that person's Documents screen. SuperConductor automatically saves the file in that person's record.

SuperConductor can interrelate categories and has an integrated scheduler/calendar that works with all subject information.

SuperConductor costs \$99.

► **Four Corners Development**
(310) 780-3835

Aha Software Corp. has introduced Aha InkWriter for Windows, a word processor for handwriting.

According to the Mountain View, Calif., company, Aha InkWriter lets users of pen-enhanced computers edit and search for handwritten words on the screen.

The product deals with pen input without depending on handwriting recognition and lets users erase, highlight, italicize or bold-face words. Deferred recognition allows users to translate handwriting into computer text at any time, so mistakes do not have to be corrected as users write.

Aha InkWriter automatically provides the correct editing and formatting options for each type of writing.

Aha InkWriter costs \$199.

► **Aha Software**
(415) 988-2080

Software Publishing Corp. has introduced Harvard Spotlight for Windows, an electronic presentation delivery product.

According to the Santa Clara, Calif.,

company, Harvard Spotlight lets users organize, rehearse and deliver existing electronic presentations more effectively.

After creating slides in any of the leading presentation packages, users can convert the presentation with an automatic capture capability.

The product was specifically designed to let presenters control the flow and delivery of electronic presentations. Features include a customizable control panel, a slide locator to change the slide order during a presentation and a timing feature that lets the user set the time for an entire presentation.

Users can run practice sessions and compare their times with the time allocated for the presentation.

Harvard Spotlight costs \$99.

► **Software Publishing**
(408) 986-8000

Aldus Corp. has announced ChartMaker, a software module from the company's Aldus Accessory Products line.

According to the Seattle company, ChartMaker is a full-featured Microsoft Corp. Object Linking and Embedding (OLE) product providing a range of charting functions directly within a user's primary application.

Users can create a chart with either native Microsoft Excel data or the data-sheet built into ChartMaker. A link is retained between every chart and its data so calculations are instantly executed when changes are made.

ChartMaker provides 84 distinct two- and three-dimensional chart types and comes with a variety of predesigned chart templates. The product displays

line and bar charts either vertically or horizontally with absolute, stacked, bipolar or dual-axis options.

Object attributes can be revealed when the object is selected with a mouse, while an eyedropper tool can pick up an object's color and apply it to other objects.

ChartMaker costs \$149.

► **Aldus**
(206) 622-5500

MicroLogic Software, Inc. has announced PrintMaster Gold CD Bonus Pack, an entry-level publishing product.

According to the Emeryville, Calif., company, PrintMaster Gold CD Bonus Pack uses a talking interface to guide users through the selection of ready-made projects.

The product includes 145 TrueType fonts and more than 1,000 color clip-art images for creating greeting cards, banners, calendars, signs and stationery.

The PrintMaster Gold CD Bonus Pack costs \$79.

► **MicroLogic Software**
(510) 652-5464

Product short

Lanier Worldwide, Inc. has announced the Lanier 4200 color printer, which uses high-resolution thermal-transfer technology to print up to four times faster than ink-jet systems. It requires no drying time and eliminates smearing, wrinkling and curling. The Lanier 4200 provides full-color printing from all IBM-compatible PCs running Windows 3.1 and comes with a Windows printer driver. Cost: \$1,195. Lanier Worldwide, Atlanta, Ga. (404) 496-9500.



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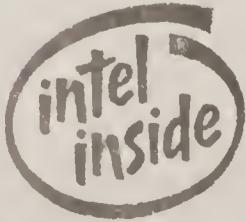
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Commentary

Jeffrey Henning

Load sharing is in your future



You are wasting at least 76% of your investment in desktop computing hardware. You could more than quadruple the computational power available to your organization if you simply made better use of

your hardware.

In fact, if you made better use of your desktop hardware, you could slash your investment in additional computers and even eliminate some currently installed midrange and mainframe computers altogether. The only reason no one has brought this to your attention before is because almost every company has the same problem and has found no way to change the situation.

You have invested in PCs and workstations that are used 40 out of the 168 hours in each week at most. This leaves 128 hours — 76% of the time — when those systems are not in use. The situation may actually be worse: Many of those computers may be in use for only 20 hours per week, although they will be on while their users attend meetings, talk on the phone and get coffee. All the while, their CPUs spin idly. You're wasting supercomputers' worth of MIPS.

Spread the load around

A young Canadian company has decided to do something about that. Platform Computing Corp. has developed software that can help you maximize the use of desktop computers. Platform's Load Sharing Facility (LSF) can distribute batch jobs across a network and supports interactive load sharing and parallel computing. The limit: Right now it is primarily available for Unix-based workstations such as those running Sun Microsystems' SunOS, Hewlett-Packard's HP/UX, Digital's Ultrix, IBM's AIX and the Open Systems Foundation's OSF/1. However, a Microsoft Windows NT version is planned. Still, LSF can help you take advantage of your workstation hardware today.

LSF is a layer that runs above operating systems and network servers and provides seamless interoperability on heterogeneous platforms. LSF will automatically distribute batch jobs to all available and suitable computers. If it is the end of the day, all the workstations on a LAN could kick in to handle different batch jobs. During the workday, only systems not in

use would process these batch jobs. Users' need for their systems always takes precedence, and any executed batch job will be suspended or run in the background while the users perform their work.

LSF is a spiritual descendent of mainframe-derived load-balancing products such as IBM's Network Queuing System. Because those products do not suspend jobs when a user comes back to his system — monopolizing a workstation until a batch job is completed — they are inappropriate for use during the workweek. Additionally, they lack the breadth of support for multiple operating systems that LSF offers. LSF can better harness the potential of a network of heterogeneous workstations.

Real-life tests

Users of LSF are leveraging their existing hardware investments. Bell Northern Research has reported about a 35% improvement in response time for its applications. Pratt & Whitney found that one type of calculation ran 20 times faster distributed across a Unix cluster than on a supercomputer. Pratt & Whitney is even using LSF to distribute jobs not just on the LAN but on a wide-area network so that computers in Hartford, Conn., and West Palm Beach, Fla., can seamlessly process a user's job that originated

at a site in Canada. LSF has even helped Pratt & Whitney get rid of a Cray supercomputer.

To be realistic, LSF is no panacea. Because it works only with Unix, it is not going to turn your Windows PC network into a supercomputer any time soon. Additionally, it does not work well for all types of applications. If you have one enormous batch job, and it cannot be subdivided at all, then it will not benefit from LSF or any other load-sharing technology.

If you have a job that requires processing significant amounts of data, it will degrade your network performance because transferring the data to the available workstation across the network via Network File System is slow. If a job requires high security, you're not going to want to distribute its data to workstations across the network. Within these limits, load-sharing technology offers tremendous potential and promises to unleash CPU power in the future even faster than Moore's Law has in the past.

Load-sharing technology is a revolution in the making. Much talk has centered on the use of networks for data sharing, but load-sharing technology goes beyond providing data sharing by providing CPU sharing. In the 1960s, thanks to terminals, everyone at a site might have been sharing one computer's CPU. In the 1980s, everyone had a CPU of their own. In the late 1990s, everyone will have access to their colleague's CPU as well as their own.

Henning is the associate director for personal systems and software publications at BIS Strategic Decisions in Norwell, Mass. He can be reached on the Internet at 649-6654@mci.com. On MCI Mail, send to 649-6654.

LAN outsourcing vendors lose sight of users' needs

By Steve Moore

Vendors of nearly every stripe are leaping eagerly into the remote LAN management business. But they do not appear to be looking carefully at users' concerns before they leap.

"People have been talking about outsourcing LAN management for over a decade now, but vendors haven't proved they can provide this service remotely in a manner that exceeds the internal capabilities of the customer at a lower cost," said Jeffrey Kaplan, a director at Dataquest Worldwide Services Group in Framingham, Mass.

While outsourcing of what Dataquest calls LAN management and operations services is expected to grow, that growth will not be realized for several years because it will take time for users to become more comfortable with outsourced LAN management.

Do users want it?

The newly emerging Desktop Management Interface (DMI) standard by the Desktop Management Task Force is expected to enable users to manage LAN-attached PCs remotely — if the standard gains sufficient support from vendors of desktop hardware and software. Users will be able to remotely perform software distribution and configuration and performance management, but many are not convinced they want to do that.

One network manager said he will defer judgment until sophisticated remote LAN management services are a widely accepted reality, not just an idea.

"It sounds like Centrex data," said Dennis Maloney, director of telecommunications services at the University of Colorado in Boulder. He was referring to carrier-provided voice network management services, which have fallen

out of favor among users.

Maloney said DMI-based remote LAN management would duplicate the internal data network management and security capabilities the university relies on.

HOW COMFORTABLE ARE YOU WITH OUTSIDE VENDORS MONITORING YOUR LANs REMOTELY?

VERY COMFORTABLE	10.4%
COMFORTABLE	15.5%
UNCOMFORTABLE	24.7%
VERY UNCOMFORTABLE	27.8%
NO OPINION	21.6%

Base: 200 IS managers and network managers

Source: Dataquest Worldwide Services Group, Framingham, Mass.

Analysts point to several barriers to effective LAN management outsourcing. "Once things standardize, they tend to commoditize, and then they tend to be candidates for outsourcing," said Mike Marburg, an analyst at Meta Group, Inc. in Reston, Va. However,

LAN management today is still distributed across the enterprise, and "outsourcing doesn't happen until it becomes a centralized [information technology] function," he added.

Growth market

The market for LAN management and operations services (remote and on-site) will grow at a compound rate of 17.6% through 1998, according to Dataquest Worldwide Services Group. New research indicates the market will expand from \$1.5 billion in 1993 to \$3.3 billion in 1998, said Jeffrey Kaplan, a Dataquest director.

A matter of trust

In addition, because many businesses see client/server applications as highly strategic, "users have to believe it's in their interest to outsource that level of management to a third party," said John Morency, a principal consultant at Strategic Networks Consulting, Inc. in Rockland, Mass.

Morency added that because DMI-compliant products are unlikely to be delivered in quantity before mid-1995, it could be late LAN management, page 44

DEC unveils strong workstations, despite troubles

By Mary Brandel

The turmoil surrounding Digital Equipment Corp. seems to have had little effect on its workstation group, which recently released two technical workstations — a high-end and a mid-range model — that secure the company's position as the price/performance leader.

The DEC 3000 Model 700, a desktop model with a 225-MHz Alpha AXP processor, is intended for two- and three-dimensional design applications such as scientific visualization and high-end financial modeling.

The 3000 Model 900 is a 275-MHz machine intended for structural engineering, structural biology and solid-state and condensed-matter physics.

"I'm pleasantly surprised with the 700," said Joseph Pollizzi, project engineer at the Space Telescope Science Institute in Baltimore. "I was going to buy a 600 but will change the purchase order for a 700."

Observers were also pleased with the

repricing of the older 175-MHz 600 to \$17,495. "Moving [the 600] below \$18,000 really brings a lot of performance into that mainstream workstation line," said Dominic Riehetti, an analyst at Dataquest, Inc. in San Jose, Calif.

Users can upgrade from the Model 600 to the 700 for \$5,995.

Pollizzi said he was less thrilled with the 900, which is slated to replace the Model 800, a 200-MHz workstation that starts at \$36,000. "If they're getting rid of the 800 but increasing the 900 by that much money, it's a mistake," he said. "We can't go that high when the only increase was CPU speed, and there was no additional Turbo Channels or I/O."

Users of the Model 800 can upgrade to the 900 for \$8,995.

With Digital's current troubles, this type of announcement could well be overlooked "but not by its competitors," said Terry Shannon, an analyst at Illuminata

DEC 3000 Model 700 AXP

Price: \$27,698 to \$40,000
CPU: 225-MHz
SPECfp92: 230.6
SPECint92: 162.6
TurboChannel slots: three at 100M byte/sec.
Memory: 64M bytes
Disk: 1G byte
Availability: August

DEC 3000 Model 900 AXP

Price: \$43,373 to \$75,000
CPU: 275-MHz
SPECfp92: 264.1
SPECint92: 189.3
TurboChannel slots: six at 100M byte/sec.
Memory: 64M bytes
Disk: 2G bytes
Availability: August

formance, "which is not developing well for desktop applications."

Silicon Graphics, Inc. (SGI) "may be more of a wild card here," Riehetti said. SGI announced the R8000 chip, a high-performance floating-point multichip set that is due out this summer or fall. However, "It will take some time for it to come into these lower price ranges," he said.

Despite its leadership price/performance, Digital is fourth behind Sun, HP and IBM in unit shipments, according to Dataquest.

Both of the announced workstations sport the new ZLX-E graphics accelerator from Digital.

The company also announced the Advantage Cluster Compute, a cluster of four rack-mounted DEC 2100 servers.

Because the DEC 2100 expands to four processors, this new system can expand to 12 processors and 800G bytes of disk storage in a single rack. With load-sharing software, users can run supercomputer applications faster with the system, giving them what the vendor claimed is "an effective alternative to supercomputers" at \$200,000 to \$300,000.

LAN management debate continues

By Steve Moore

McAfee Associates, Inc. recently said it will push its LAN management interfaces as industry standards that will allow client PCs to provide consistent information about themselves to server-based LAN management applications.

McAfee President Bill Larson said the firm this fall will offer its LANOpen interface for adoption as part of the Desktop Management Interface (DMI), a standard being developed by the Desktop Management Task Force (DMTF).

"The value of what McAfee is trying to accomplish is that if there's a common interface for the [remote use] of the DMI across LANs, then any number of management applications can compete," said Chris Thomas, DMTF chairman and manager of technology and alliances at Intel Corp.

With such a common interface, he said, DMI would provide standardized information about hardware and software inside each client PC. Different types of LAN management applications would then compete on application-specific features such as graphical user interfaces.

Nothing on the table

"There haven't been any official proposals from McAfee or anyone else yet," Thomas said. "They should join the DMTF and work with us. We welcome them in that regard." He noted that others working on remote LAN manage-

ment interfaces include Hewlett-Packard Co., Spry, Inc. and Intel.

The LANOpen specifications can be used in software or firmware. McAfee, based in Santa Clara, Calif., claims that if LANOpen is implemented in flash programmable read-only memory, it will conserve a PC's memory and system resources. By doing so, PCs will provide faster response times for LAN management applications written to support LANOpen.

"You can see 30% to 50% performance gains when you put things into firmware because of the faster processing speeds," said Bob Johnson, an analyst at Dataquest, Inc. in Framingham, Mass. "McAfee will have to quantify those [processing speed] savings for people to justify embracing the technology."

One monitor too many

"I'm less concerned about off-loading the CPU and more concerned about off-loading the memory," said Katherine Epes Barrett, a consultant at International Finance Corp., a member of the World Bank Group in Washington. However, she added, "It's all well and good to have it out of the user's memory. But if I have to put yet another monitor up in my network control center, it's not going to be exactly what I have in mind."

Rather than being confronted with another separate monitor

screen, users will likely have to monitor an additional window within an existing integrated systems/network management application from HP or Tivoli Systems, Inc., for example, Larson said.

Eventually, he added, McAfee plans to offer LANOpen firmware aimed at standardizing the collection of desktop information for a broad range of server-based LAN systems management applications, including software distribution and license metering, inventory and configuration management and trouble ticketing.

Some users question the need for far-reaching LAN systems management standards, whether in firmware or software. "We have a hard enough time just knowing if things are up at all, let alone dealing with all this extended [systems management] stuff," said Larry Kreighbaum, senior computer facilities analyst at Amoco Corp. in Tulsa, Okla.

While new firmware might have its place in some devices, he added, it is not needed for computers "that already have enough processing power to run an agent." Larson said the new firmware will be useful in the large installed base of older, less powerful PCs.

"It's important that we do not manage the open [application programming interface]. If a vendor does that, its openness is called into question," Larson said.



LAN management

CONTINUED FROM PAGE 43

1996 before vendors gain experience using such products in their outsourcing schemes.

Security is also a looming concern for network managers. "I would want to be sure that no DMI agent controlled from an outside source could be allowed to cruise through my financial database," said John McConnell, president of McConnell Consulting, Inc. in Boulder, Colo. Yet he added that DMI would likely play "a tremendous role internally" because it will let organizations centralize and consolidate systems management functions.

Other users said human factors must also be kept in mind. "A LAN manager's job is much more than just the technical part of it. It's also the interpersonal communication between the users and the LAN management staff," said Mike Garrett, a network administrator at the Mellon Bank in Pittsburgh.

Things to ponder

Before users jump on the remote LAN management bandwagon, Morency observed, they should find answers to the following questions:

- What portion of the DMI standard is going to be supported by each vendor's products?
- How will DMI interoperate with the Simple Network Management Protocol?
- When will DMI be fully supported by enterprise network management systems such as Hewlett-Packard Co.'s OpenView or IBM's NetView?

In the long run, DMI has tremendous potential for managing remotely, said Frank Dzubeck, president of Communications Network Architects, Inc. in Washington.

"You'll know before the user does when he needs a bigger hard disk or a new PC," Dzubeck said. "You also may find that the software you've been buying for years is not performing as well as it should."

Companies converging on the remote LAN management market today include major computer vendors such as IBM and HP; networking vendors such as Banyan Systems, Inc. and Crosscomm Corp.; and others including Electronic Data Systems Corp., Computer Sciences Corp., Infonet Services Corp. and Vanstar Corp.

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COMPUTERWORLD
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Turn to
Page 90

UK bank spin-off launches workflow software winner

By Elizabeth Heichler
LONDON

National Westminster Bank PLC recently released custom-developed workflow software as a commercial package called Integrated Work.

The UK bank's computing subsidiary, Centre-file Ltd., built the Microsoft Corp. Windows NT-based package for National Westminster's customer service centers as part of a business process improvement project. The subsidiary plans to sell the workflow application in the UK and the U.S.

"We decided to develop the software because no workflow system in the market was sufficiently robust and scalable for [the bank's] needs," said Noel Dearing, managing director at Centre-file.

The workflow system has scaled to 600 client workstations and 23 Windows NT servers. In addition, the business process redesign that the software implements saves the bank more than \$4.5 mil-



lion annually, Dearing said. Priorities for the system were that it work with the existing information technology infrastructure and that it have a strong security system, he added.

The central component of Integrated Work is WinWork, a software tool kit that designs workflow patterns for business processes. WinWork takes over the management of patterns that serve as a workflow engine. It offers facilities for integrating to existing systems and elements such as image-processing equipment.

The modules available with WinWork handle document production, print management, document image processing, output to laser disc

for mass information storage and retrieval, optical character recognition, fax integration, call center management, legacy systems integration and security.

The company hopes to have a Unix version of Integrated Work available in the first quarter of next year, officials said.

Moving into the U.S. market will be criti-

cal to Integrated Work's success, according to Peter Shephard, marketing director at the bank. "We've got to have a presence in the States pretty quickly, and we're comfortable that with our partners, we'll get a foot in the door."

Trans-Atlantic deals

Microsoft Ltd., Sequent Computer Systems, Inc. and Aspect Telecommunications have strategic marketing relationships with Centre-file for the UK and will work with it in the U.S. as well.

After sales start rolling in the UK, "we

are currently building a plan. We'll initiate sales here in the UK and then start building a beta program in the U.S.," said Mark Miller, vice president of marketing at Sequent. The firm is working with Centre-file on its Unix port and also with NT.

Microsoft will examine how it can introduce Centre-file to key independent software vendors and partners in the U.S., said Geoff Hughes, partnership manager at Microsoft Ltd. in the UK.

Heichler is a European correspondent for the IDG News Service.

Briefs

SunSoft updates Interactive

SunSoft, Inc. announced Version 4.1 of its Interactive Unix operating system for Intel Corp. desktop machines at last month's PC Expo '94. The update to Interactive System V/386 Release 3.2 includes support for more PC peripherals and more PC device drivers, as well as support for Novell, Inc.'s IPX/SPX networking protocol stack. Prices for Version 4.1

of Interactive start at \$495. Upgrades from older versions cost \$99.

MIT spin-off merges

The X Consortium, which spun off from MIT last year, announced it will merge its development and marketing activities with the X Industry Association, which promotes the use of X Window System products. X Consortium president Robert Scheifler said the move is being made to create a push for a standard commercial X-based desktop.

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New Products

Keyfile Corp. has announced KeyConnect for Notes, software that allows the company's Keyfile integrated document management system to interoperate seamlessly with Notes.

According to the Nashua, N.H., firm, KeyConnect lets Notes users integrate high-end document imaging and workflow capabilities into Notes desktops and also lets Keyfile users take advantage of Notes communications technology.

With KeyConnect's support for Dynamic Data Exchange and Microsoft Corp.'s Object Linking and Embedding, users can access Keyfile objects from within a Notes application.

KeyConnect provides optional support for Notes' Vendor-Independent Messaging (VIM) so Keyfile documents can be sent across an enterprise network or exchanged with any other software package that supports VIM.

KeyConnect costs \$795 or \$995 with VIM support.

► **Keyfile**
(603) 883-3800

Delrina Corp. has announced FormFlow 1.1, electronic forms routing software.

According to the Toronto company, FormFlow 1.1 includes forms data inter-

change (FDI) and electronic data interchange capabilities, additional database connectivity to Notes through Microsoft Corp.'s Open Database Connectivity and seamless electronic-mail routing support for WordPerfect Corp.'s Office.

The FDI capability integrates the binary file transport capabilities of WinFax Pro 4.0 with FormFlow 1.1 and lets users route forms and data as binary information via fax.

FormFlow 1.1 consists of two components: Designer for creating forms applications and Filler for filling in and routing forms via E-mail and fax.

Prices start at \$129.

► **Delrina**
(416) 441-3676

Ibex Technologies, Inc. has announced FactsLine for Lotus Notes, fax-on-demand software.

According to the Placerville, Calif., company, FactsLine for Lotus Notes lets Notes users use Notes documents as fax-on-demand documents without printing or manually faxing them.

The product automatically creates fax documents from Notes documents when a caller requests them and caches frequently requested items.

Other features include credit card charging, account number access, call accounting and complete recording. Non-Notes documents can also be

scanned or faxed into the system.

Prices start at \$6,700.

► **Ibex Technologies**
(916) 621-4342

Marin Research has announced Project Gateway, a Windows-based integration product.

According to the Mill Valley, Calif., company, Project Gateway integrates Microsoft Corp.'s Project and Symantec Corp.'s Time Line project management software with Notes.

The product adds importing, exporting and synchronization capabilities to Notes and lets users combine up-to-date project schedule information with specifications, customer correspondence, drawings and methodology.

Project Gateway automatically records project revisions and maintains effort and progress data by time periods.

Prices start at \$895.

► **Marin Research**
(415) 389-5444

Cayman Systems, Inc. has announced the Iseries GatorRoute IR and GatorStar IHR workgroup routers.

According to the Woburn, Mass., company, the routers provide two flexible serial wide-area network ports for connection between remote offices and the corporate site via leased line, analog dial-up and digital dial-up. Two Ethernet

segments allow for local routing at the branch office.

The routers are compliant with Point-to-Point Protocol, providing a standard for transporting high-level local-area protocols such as IP, Novell, Inc.'s IPX, Digital Equipment Corp.'s DECnet and Apple Computer, Inc.'s AppleTalk over wide-area links.

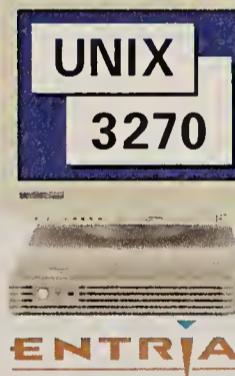
GatorRoute IR costs \$2,495, and GatorStar IHR costs \$4,495.

► **Cayman Systems**
(617) 932-1100

Product shorts

Mountain Network Solutions, Inc. has announced FileSafe for Windows Rescue NetWare Loadable Module 1.1. It features support for workstation backup, automated backup protection, comprehensive data management capabilities and fast disaster recovery for both client and server applications. Cost: \$499. Mountain Network Solutions, Scotts Valley, Calif. (408) 438-6650.... MITI has announced AdHawk, a real-time visual monitoring and diagnostic tool for Oracle Corp. relational database management systems. It analyzes database components and activity to locate system troubles and diagnose their cause, guiding users through each level of system diagnostics. Cost: starts at \$999. MITI, Long Beach, Calif. (310) 424-4399.

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Getting hitched to the Internet

A semiregular column with items of interest and amusement from the Internet.

- Before you can fetch the fun facts and figures available on the Internet, you first need to think about getting yourself connected. CommTouch Software, Inc. in San Mateo, Calif., recently announced a PC-based E-mail client to TCP/IP hosts that eliminates the need for a Unix gateway. Pronto uses Windows' own Sockets (Winsock) API to interface with TCP/IP stacks and uses standard POP and SMTP protocols for exchanging incoming and outgoing mail with the host mail server. The software, which began shipping in July, sells for \$69 for a single-user copy. For more information, contact CommTouch at pronto@commtouch.com.
- However, just getting connected may not mean you get your mail. MCI Communications Corp. conceded two weeks ago that an overflow of mail — much of it from the Internet — to users of its MCI Mail service had slowed down the MCI computers supporting this application, backing up mail to the servers trying to deliver it. MCI officials have been quoted as saying they plan to add capacity to their E-mail service with extra computers in the next couple of months.

- If you like learning from history's trend lines, be sure to look at a historical database made available by the Center for Electronic Records on the National Archives Gopher server, GOPHER.NARA.GOV. Among the things you can research are data from the 1970 census, records from the President's Commission on the Space Shuttle Challenger accident and casualty records from the Korean and Vietnam Wars. Send mail to tif@cu.nih.gov.

- For business-related information, check out Inter-Serv, an Internet service provider that recently announced WebMaster, a place for posting product and service announcements. WebMaster is connected to the Internet at 1.544M bit/sec., and service starts at \$400 per month, plus a start-up fee. For more information, call (206) 447-0800.

- But if the products you seek come from computer or communications vendors, Spry, Inc. in Seattle has NetAccess, a directory of information about 52 of these firms. Organized by topic, such as hardware, software or internetworking services, NetAccess consists of company "home pages," or Internet addresses, for participating vendors. NetAccess comes with Spry's Windows TCP/IP package, the AIR series.
- Finally, the free-wheeling nature of the Internet has software developers and publishers worried — and rightly so — about a mechanism for handling royalty payments. Enter Carnegie Mellon University, which is testing a computerized billing system that would let businesses charge users for documents moved over the Internet for printing or reading.

—Ellis Booker and Gary H. Anthes



Note: Companies with Internet-related products or services or readers with neat 'net-related info are encouraged to contact us electronically at ellis@ew.com.

Cabletron, Cisco set out to woo competitors' customer base

By Stephen P. Klett Jr.

Competition among the internetworking giants heated up late last month as Cabletron Systems, Inc. and Cisco Systems, Inc. confirmed reports that they would offer SynOptics Communications, Inc. and Wellfleet Communications, Inc. users one year of free service and support to switch to their equipment.

Cisco and Cabletron officials said they have up to a one-year window to capture SynOptics' and Wellfleet's customer base as the two vendors work to complete their proposed merger [CW, July 11]. "We have a tremendous opportunity here, and frankly we're going after it," said Michael Wells, director of marketing at Cabletron in Rochester, N.H.

Free support

Cabletron and Cisco will offer one year of free around-the-clock technical telephone support — and on-site support on a case-by-case basis — to SynOptics and Wellfleet customers who make the switch.

In addition, both vendors said they will continue to offer volume discounts and 30% buybacks on competitors' equipment. This is a common method of warfare most vendors have used on an ad hoc basis to woo one another's customers.

Analysts said that while the tactics may not be new, Cabletron and Cisco's counterstrike is significant be-

cause it is coordinated from the top down and both companies are going after accounts together.

"The fact that these two companies are going hunting together is very interesting," said Melinda Lebaron, an analyst at Gartner Group, Inc. in Santa Clara, Calif. Lebaron said she expects other SynOptics/Wellfleet competitors such as 3Com Corp. to follow suit.

The proposed merger and competitive response from Cisco and Cabletron could push Cisco and SynOptics' relationship onto rocky ground. SynOptics currently sells Cisco router modules for its hubs.

"I look at this [merger] like the divorce of two friends. Once they divorce, it's very hard for you to maintain a relationship with either one," said John Morgridge, president and chief executive officer at Cisco in San Jose, Calif., in an interview with *Computerworld* last week.

Moving on

Meanwhile, it is "business as usual" at SynOptics, which expects to maintain its relationship with Cisco because it is "clearly in our mutual self-interest to do so," said Mike Levy, vice president of sales at Santa Clara, Calif.-based SynOptics.

However, he hinted that SynOptics would match the free service and support offering. "If free service and support comes down to us making or not making a sale, we

Cabletron, Cisco, page 50



DANIEL VASCONCELLOS

Been there, done that

Computerworld staff writer Steve Klett recently talked with Eric Benhamou, president and chief executive officer at 3Com in Santa Clara, Calif., about the proposed megamerger of SynOptics and Wellfleet and its effect on the industry.

Q: Based on your experiences during 3Com's difficult merger with Bridge Systems in 1987, what do you see as the major challenges facing SynOptics and Wellfleet?

A: In a "merger-of-equals" situation, you have a variety of differences that don't appear when you have a clear acquisition. No. 1 is ambiguity of who the decision-maker is. No. 2 is the need to achieve synergy between your respective administrative and sales forces so you have one interface to the customer. You need to eliminate conflict between internal channels and focus on complementary aspects without stepping on each other's toes.

Q: Do you think SynOptics and Wellfleet can pull it off?



3Com's Eric Benhamou says he thinks the merger will be tough

A: I think this merger is the most difficult transaction to complete in the industry. I think SynOptics and Wellfleet can create a strong company, but they will experience some pain.

Q: How will the merger affect your company and the rest of the industry?

A: I think the merger will have a great benefit of clarifying in more dramatic fashion the process of integration.... It is clear we have now fully entered this new phase of the market, and people are looking at their networks as full-connectivity systems, and they need to be masters of hub, switching and routing technology, combined with network management.

Q: What does this consolidation mean for users?

A: Users will engage their suppliers at a different level of debate than they have in the past. They will no longer compare products A and B on price/performance alone. They will look more closely at architectural strategy from three or four main companies, which will really make networking sales similar to the major systems sales we've seen over the last 20 years.

AAA to link up through frame-relay network

By Ellis Booker

The American Automobile Association (AAA) will have 90 of its 127 member clubs linked via a frame-relay network by year's end. This will occur under a \$100 million contract announced last week with AT&T Corp.

AAA began deploying its new data network, dubbed ClubLink, late last year, using frame-relay services from both AT&T and MCI Communications Corp.

Coming together

"We said, 'Maybe it's time to consolidate [around one carrier],' said Bob Galovic, director of telecommunications at the AAA National Office in Heathrow, Fla. He noted that the 92-year-old AAA — which claims 36 million members in the U.S. and Canada — has always been a decentralized operation.

However, the organization has been attempting to centralize and regionalize its operations. "For instance, we're looking at core areas of data and communications standards ... to take advantage of our



national strength without losing the local feel," Galovic said.

Fueling the ClubLink initiative has been AAA's move into the wholesale business. Traditionally, AAA members are associated with a local club. Emergency roadside service or travel assistance calls come to that club's local call center.

But since January, AAA has been marketing its services in an unbundled fashion to car manufacturers, credit card companies and cellular carriers, which in turn offer AAA membership as a premium.

These customers call a toll-free phone number, which rings in a consolidated call center at the association's headquarters. Representatives at this center verify membership, gather data and locate the appropriate local AAA club, which receives an electronic alert via ClubLink.

A second application that re-

quires the frame-relay network is a centralized travel information database that is also being developed at AAA's headquarters in Orlando, Fla.

What lies ahead

AAA announced several contracts with AT&T, covering network services and both networking and computer equipment. It will use AT&T 800 Service, Software Defined Network service and Accunet data communications services, as well as AT&T InterSpan Frame Relay Service.

Separately, AAA will purchase \$20 million worth of PC and server hardware from AT&T Global Information Solutions during the next five years.

an estimated 30,000 employees total — this host processor may have to be upgraded to a massively parallel processor.

From Novell, Inc. LAN-connected Windows workstations, travel representatives at member clubs will be able to access this host database — based on a Sun Microsystems, Inc. Sun 2000 running Informix Corp.'s Informix — in real time, according to Galovic. The application's primary purpose is to put the information from printed sources into an electronic format so members' travel packages can be better customized.

According to Galovic, as the application scales up to support the approximately 10,000 AAA travel consultants — out of

Point-to-Point Protocol smooths path to ISDN

By Ellis Booker

■ **Important headway on a uniform Integrated Services Digital Network (ISDN) interconnection standard was made last month as several bridge and router vendors showed their products internetworking with an Internet Protocol.**

The Point-to-Point Protocol (PPP) was developed by the Internet Engineering Task Force to interconnect dissimilar LAN connection devices across the Internet.

"The main problem with ISDN networks up until now is that the bridges and routers have used proprietary protocols," said Jeffrey Fritz, a telecommunications engineer at West Virginia University in Morgantown, West Va. He said last month's event was significant because it will eventually free network managers to mix ISDN devices in their wide-area networks. PPP support promises plug-and-play, multi-vendor ISDN networks, Fritz added.

Nothing new

One ISDN proponent, the University of Michigan Information Technology Division in Ann Arbor, has been offering ISDN access for more than five years using a mix of equipment. "But there are some combinations [of equipment] that work and others that don't," said Dory Leifer, a strategic planner in network systems.

Up until now, cross-vendor connectivity has involved two or more vendors that agree to emulate one another's proprietary protocols. "But I want interoperability to survive, even if this relationship doesn't," she said.

The university has 50 or 60 ISDN users on and off campus but wants to upgrade all its remote users — estimated conservatively at 10,000 — from 9.6K bit/sec. modems to ISDN lines.

Last month's demonstration, presented at the North American ISDN Users' Forum, was sponsored by the National Institute of Standards and Technology in Gaithersburg, Md. Participating vendors included AccessWorks Communications, Inc., Gandalf Technologies, Inc., IBM, NetCS Informationstechnik GmbH and Network Express, Inc.

The multicompany hookup used the PPP protocol running over an ISDN Basic Rate Interface — a 64K bit/sec. B channel. Both bridging and IP-level routing were demonstrated.

Some ISDN equipment vendors said they think PPP support will arrive just in time.

"There's much broader implementation of PPP" because it is a standard and thus more adhered to than proprietary protocols, said Randy Sisto, director of marketing at Network Express in Ann Arbor, Mich. "When you're dependent on emulating a [proprietary] protocol, you might get just one or two vendors to support it," he said.

Shiva opens doors on remote access

By Suruchi Mohan

Vacation may mean sun and sand to some, but to others, it means never having to leave their networks. And for those vacationers, an enhanced remote-access product from Shiva Corp. may fit the bill.

Take Bill Hudson, for example. An assistant computer systems manager at Output Technologies, Inc. in Kansas City, Mo., Hudson recently went on vacation but remained plugged in. He used Shiva's LanRover 3.0 software to log into the network and perform his administration tasks just as if he were sitting in the office.

LanRover 3.0 can connect to a Novell, Inc. NetWare 4.x file server, which a lot of products do not do, Hudson said. By supporting NetWare 4.x as well as earlier NetWare versions, administrators can spread their resources all over the network instead of keeping them all on one file server.

Making it easy

Native Novell IPX support means that when users dial into the network, they become nodes on the network in a way that is transparent to them. Hudson said that although this capability was available before, it was not easy to use.

Nor is IPX the only protocol supported. The product also supports TCP/IP, Apple Computer, Inc.'s Apple-

Talk, NetBEUI and 802.2/LLC. Whereas the previous versions supported all of these except AppleTalk, they did not do so concurrently, said Keith Burns, systems engineer at Cylix Communications Corp. in Memphis. "With 3.0, we can do both Apple and IBM," he said. "It is important that the IBM and Mac user can share the same system simultaneously."

Stan Adell, computer systems manager at Output Technologies, agreed. "It's worked out real well for a mixed network environment," he said. "We had to use different modems and software for each [system]; now we use just one."

Better connectivity

Adell said his company's remote office in Denver has seen improved performance with Version 3.0. Also, with the earlier version, users would sometimes lose

connections, and it was hard to isolate the problem. Since installing the new product, they have not had that problem, he said.

However, Burns would like to see some improvements to Version 3.0 — namely, the activity logger running on an XT or a 286 PC rather than on a 386 running Windows. "All it does is monitor server activity, so why tie up a more powerful machine?" he asked.

A Shiva spokesman responded that most customers have been requesting a Windows interface for their activity logger.

Cabletron, Cisco

CONTINUED FROM PAGE 49

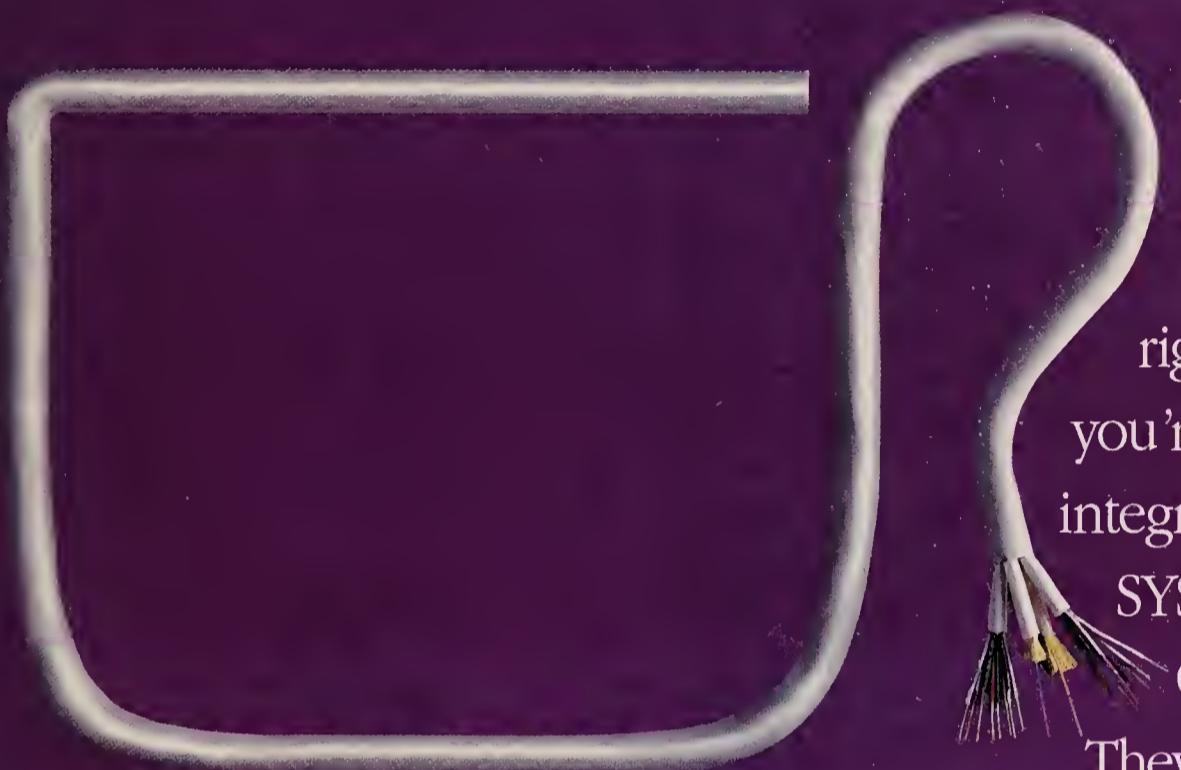
will be competitive," Levy said.

Either way, customers do not appear eager to make a switch.

"A year of free service and support is not that big a deal to us — but maybe if you're a Cabletron site, you would need it," said Mel Lively, network manager at Presbyterian Healthcare System, a large SynOptics and Cisco site in Dallas. Lively said it would not be cost-effective to change brands — either on the hub or router side — because of retraining issues.

"We've already got our networking structure in place, and nothing could justify its disruption," said Thomas Casey, director of information technology at *Forbes* magazine in New York. *Forbes* uses SynOptics hubs.

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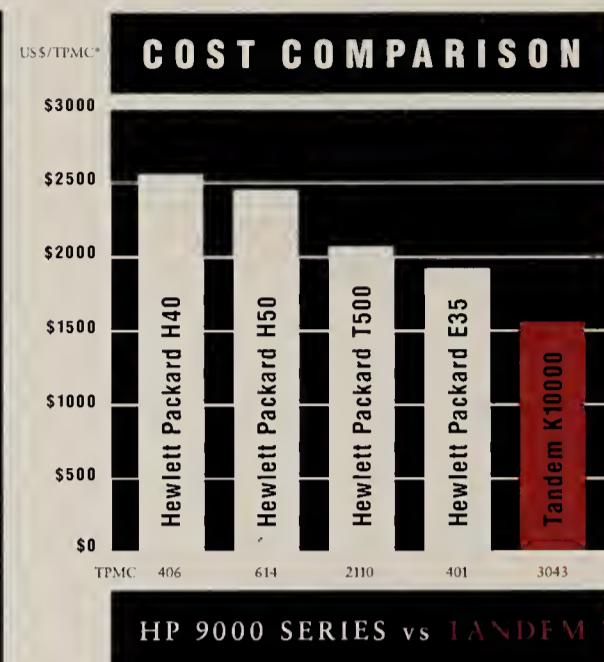
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TANDEM MEANS BUSINESS

Research lab sizes up slew of supercomputers

By Gary H. Anthes
BOULDER, COLO.

While users debate the future of different approaches to high-performance computing, one organization is hedging its bets by trying them all.

The National Center for Atmospheric Research (NCAR), sponsored by the National Science Foundation, has shared-memory vector supercomputers from Cray Research, Inc., a massively parallel computer from Thinking Machines Corp., an IBM Scalable Parallel-1 system, a cluster of IBM



The National Center for Atmospheric Research is the only user to have installed the Cray 3

RS/6000 workstations and a Sun Microsystems, Inc. SPARCserver 670MP.

NCAR is the only user to have installed and tested Cray Computer Corp.'s first offering, the shared-memory Cray 3, which features gallium arsenide processors.

The Cray 3 was brought in a year ago to run climate models, but it was plagued by memory problems, and its performance was too little too late, as even its designer, Seymour Cray, conceded. It had other glitches as well, said Bill Buzbee, director of NCAR's Scientific Computing Division. "The square root is off by 1 bit every 60 million square roots," he explained.

Now the Cray 3 at NCAR sits idle while the research facility uses a greatly improved version of the radical new machine at Cray Computer's facility in Colorado Springs, 100 miles to the south. "It is very nearly a production machine, but it still crashes occasionally," Buzbee said. "Cray has made a lot of progress, and we are pretty demanding users."

Indeed, although the Cray 3 has not been tested on a wide variety of applications, there is some evidence that Cray's long struggle to substitute gallium arsenide for sil-

icon in processors may pay off. An advanced climate model was run on a gaggle of NCAR computers, and the Cray 3 came out tops, running it nearly 25% faster than the top-of-the-line machine from archrival Cray Research.

Place your bids

If Congress is forthcoming with the funds, NCAR will add a new state-of-the-art supercomputer to its \$50 million base of scientific computers next year. Buzbee said he expects a bid from Cray Computer for the Cray 4; from Cray Research for the Triton, its next-generation of shared-memory supercomputer; from IBM for the new Scalable Parallel-2; from several makers of massively parallel processors (MPP); and from one or more Japanese companies.

According to Buzbee, a 1,000-processor MPP system costs about the same — \$25 million — as a shared-memory vector supercomputer such as the 16-processor C-90 from Cray Research. Both machines can perform at roughly the same level, 5 billion floating-point operations per second (GFLOPS) to 6 GFLOPS.

But Buzbee said he expects the next generation of shared-memory vector machines, such as the 32-processor Triton, to deliver about 20 GFLOPS for the same price.

The purchase or lease cost of an MPP system does not tell the whole story, Buzbee said, because it fails to account for the greater effort required to program it.

To overcome the software disadvantage, a 1,000-node MPP machine would have to work at 40 GFLOPS — four to eight times faster than currently — to make it as attractive as a 20-GFLOPS shared-memory supercomputer of comparable price, Buzbee said.

Meanwhile, NCAR is looking to workstation clusters as a good interactive environment for single-processor supercomputer applications. Costing \$2,000 per sustained MFLOPS — less than half the cost of a high-end supercomputer — workstation clusters are "deliciously cost-effective," Buzbee said.

By Kim S. Nash

■ Oracle Corp. has yet to release any object-oriented databases or tools, but Oracle users can get a jump on object programming languages via a database add-on product from Hewlett-Packard Co.

At least, HP hopes that is the case for its so-called Odaptor tool, which was unveiled last month.

A translator of sorts, Odaptor was designed to sit between the strictly relational Oracle 7 database and the C++ and Smalltalk object-oriented languages. The product, which is not due to ship until September, lets Oracle store objects — both data and business models — by mapping them to relational formats.

Though similar tools exist for bridging the object and relational worlds — offerings from Illustra Information Technologies, Inc. and

What you need			
Minimum requirements to run HP's Odaptor object-to-relational translator			
	OPERATING SYSTEM	MEMORY	DISK SPACE*
CLIENT	HP/UX 8.08 or later	32M bytes	10M bytes
	Solaris 1.0 or 2.0	32M bytes	10M bytes
	AIX 3.2.5	32M bytes	10M bytes
	DOS 5.0 or Windows 3.1	4M bytes	1M byte
SERVER	HP/UX 9.0 or later	64M bytes	15M bytes

*Does not include "swap space," which HP says can significantly increase the necessary disk space, depending on an application's complexity

Commentary

Paul Gillin

Keep your eye on CA



Whether you love Computer Associates or hate it (and there are people on both sides of that fence), you have to admit the company is executing very well right now.

In one hyperactive week in May, CA definitively settled its acrimonious legal battle with Electronic Data Systems and purchased The ASK Group

UniSQL, Inc., for example — HP's stability and consulting services stand to attract corporate information systems, observers said.

"The bigger picture isn't one or two capabilities that one product might have over another," noted Hugh Bishop, manager of emerging technologies research at Aberdeen Group in Boston. "The real zinger is being able to deliver a solution [that includes] consulting and integration," Bishop said.

Unlike HP, Illustra in Oakland, Calif., formerly known as Montage Software, Inc. and UniSQL in Austin, Texas, lack extensive internal resources to help IS shops understand and use object-oriented products, he said. Both firms, however, are partnering with integrators and small, third-party consulting firms to provide such training.

In addition, products from Illustra and UniSQL cannot access nonrelational legacy databases.

Many Oracle users are looking for ways to improve application development but have been unable to use C++ or Smalltalk with the Oracle database, said Bruce MacDonald, chairman of the Vancouver Oracle Users Group.

Oracle "is only just now entering the graphical tools market," MacDonald said. "Not everyone's going to wait for Oracle 8," he added, referring to Oracle's hyped but still vague plans for adding object technology to Release 8.0 of its database.

Sybase, Inc. and Informix Software, Inc. users, who also have yet to see object technology addressed directly in their databases, are also in HP's sights.

Odaptor accesses Informix and Sybase databases via Information Builders, Inc.'s EDA/SQL gateways. The links are packaged with the product, which is priced at \$6,000 for a license for two concurrent users. Additional users can be added for \$3,000 each or \$1,500 each in the 128-user range, the HP spokesman said.

for the bargain price of \$311 million. The EDS suit had all the makings of a protracted and destructive war, yet CA and EDS lawyers dispatched it with amazing speed. The ASK deal was simply a steal. For less than one year's revenue, CA bought a database with a reputation for technical elegance but marketing mismanagement.

Yet CA's position as the second largest independent software vendor clearly makes the rest of the software industry nervous. The Microsofts, Lotuses and Novells of the world would just as soon it went away.

That's because CA's hardball style and odd business model make the industry jittery. Unlike the PC gang, CA's success did not grow out of a single hit product. The one category CA does dominate — systems management — is about as sexy as moldy cheese. CA executives don't hang at the hot tub with the software zillionaires at industry confabs or one-up one another with the paint jobs on their Porsches. The company doesn't talk much about vision or cul-

Gillin, page 56

Users tough sell for AS/400 catalog

By Craig Stedman

As the AS/400 direct-mail catalog turns a year old, IBM hopes it will catch on as a low-cost way of selling upgrades and add-on products to the installed base. But the catalog will not get any birthday presents from several AS/400 users who said they prefer the face-to-face contact of direct sales.

Five customers interviewed recently said they are not using the AS/400 Direct catalog, and four indicated they do not expect to order from it in the future. While discounts of 10% or more are offered through the catalog on products such as memory boards, disk drives and network adapters, they said dealing with an IBM sales representative still holds the promise of better deals.

Direct sales also provides a higher level of comfort with a midrange system such as the AS/400, according to these users. Some said they are concerned they will not get the same level of product knowledge and sales support over the telephone.

"We've looked through it and some of the stuff looks interesting, but quite frankly, it's not the same as talking to a rep and having somebody come out here," said Marc Novik, director of information systems at HealthInfusion, Inc., a Miami-based division of Coram Healthcare Co.

While catalogs are fine for PCs, "it's a little bit different when you're talking

about products of this nature," Novik added. AS/400 Direct "could be useful in small accounts or more remote locations where sales reps aren't as readily available," he said.

Aegis Insurance Services, Inc. in Jersey City, N.J., is a small account with a single AS/400 D50 system. But Aegis has managed to keep the ear of IBM's direct sales force at a time when many medium-size and small customers are being handed off to resellers, and it prefers that kind of attention.

"So far, the way history has gone here is that we've used the catalog as a kind of pricing guide for when we're doing budgeting," said John Le Goff, systems development manager at Aegis. "Then we'll talk to our IBM sales rep for ordering. Prices change so fast, and we want to do some wheeling and dealing."

Open to catalog

Ed Taylor, MIS director at Fender Musical Instruments Corp. in Scottsdale, Ariz., has not seen AS/400 Direct but said he would be more amenable to buying products out of the catalog. Other firms selling AS/400 add-ons "don't make house calls either," Taylor noted. "I don't deal face-to-face with that many sales reps anyway."

AS/400 Direct was officially launched as an IBM marketing channel

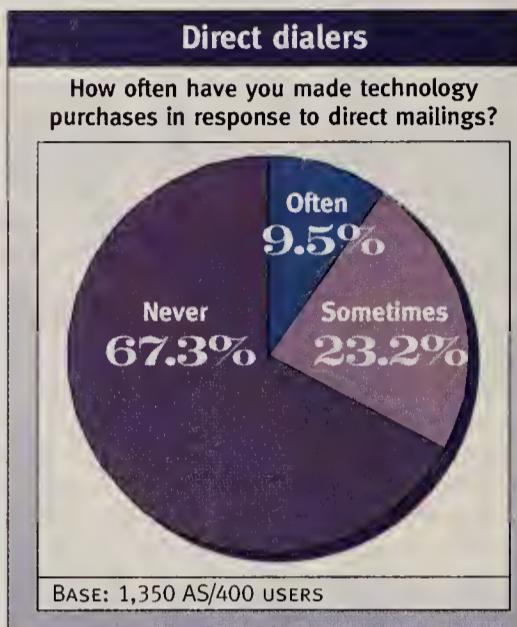
last August, although IBM started testing the catalog in late 1992 and has been counting its revenue since the start of 1993. Analysts estimated that 1993 catalog sales were less than \$100 million.

Melanie Dunn, AS/400 catalog manager at IBM, would not disclose the actual sales level but agreed that it was "relatively small" last year. However, IBM expects AS/400 Direct business to quadruple in 1994 and is "very encouraged by the success of the channel thus far," she added.

IBM has increased the number of telephone sales reps dedicated to the AS/400 from

five a year ago to about 55, Dunn said. IBM is aware of concerns about the operators' expertise and is "trying to reassure customers that the telesales reps are as knowledgeable" about products as its field force, she said.

AS/400 Direct is aimed mainly at selling so-called "aftermarket" products



Source: Elms Information Services Group, San Diego

to existing customers, from peripheral add-ons to CPU upgrades. "There are certain products that customers really don't need a sales rep to buy," Dunn said. "We also can provide more coverage" at a reduced cost, despite the cutbacks that IBM has made in direct sales in the past few years.

David Andrews, managing partner at the D. H. Andrews Group, Inc., a consultancy in Cheshire, Conn., said he expects the catalog to be a successful mechanism for selling add-ons and perhaps even software to AS/400 shops. "In effect, IBM was smart enough to emulate its competitors," Andrews said. "The prices of these products have dropped so much that they didn't have any other choice."

AS/400 Direct remains a tough sell to some. "The value-add IBM provides is always that they have a good customer relationship," said Roger Finoli, manager of planning and technology at Dominion Textile, Inc. in Montreal. "We are spoiled people, and going through a catalog is not that simple when you're dealing with these things."

subleased 56,000 sq. ft. of space at IBM's Solana data center. About 90 Levi employees will work at the Texas site, but just 16 of them are moving from Levi's San Francisco headquarters, the company said.

HP reassigned manager

Glenn Osaka has moved to where the action is at Hewlett-Packard Co. Osaka, who had been general manager of HP's proprietary HP 3000 division, has taken a new assignment as general manager

of HP's Professional Services Organization. He will be in charge of consulting and systems integration.

System backs up Oracle 7

Epoch, Inc. announced that its Epoch Enterprise Backup system can now back up and restore Oracle Corp. Oracle 7 database files. The system is integrated with the Oracle Parallel Backup/Restore utility, allowing multiple data files and table spaces to be backed up at one time.

Gillin

CONTINUED FROM PAGE 55

ture. In the hip, clubby world of software, that's definitely uncool. In fact, belonging to the club doesn't seem to rate very high on CA's list at all.

The right approach

Then there's CA's maddeningly effective business model. In 10 years, the company has increased revenue twentyfold by buying up dying companies, cutting costs sharply through a large onetime layoff and using maintenance revenue to grow into new markets. The approach looks brutal in an industry that prides itself on compassion, but it has brilliantly insulated CA from disaster.

With more than 300 products, none of which accounts for more than 10% of revenue, CA will never have to bet its future on a single hit. It can shrug off product failures or marketing missteps. It will continue to grow because there will always be badly run software companies with good products to buy. And no matter

what you may think of CA's business practices, the company understands complex corporate information systems and the issues involved in running them. That's something the PC industry will, for the most part, dutifully ignore.

During the past two years, the company has acknowledged and taken steps to fix some of the customer satisfaction problems that used to make CA-bashing a spectator sport at user gatherings. It has quietly stuck to its CA '90s product integration strategy while other grand schemes, such as IBM's SAA and Digital's NAS, have gone by the boards. It has actually enhanced products such as CA-IDMS and CA-Datacom, which would have been no more than source code escrow bait by now if they had stayed under the control of Cullinet or Applied Digital Research.

Smart move

The Ingres acquisition has drawn lots of negative publicity because of the abrupt way CA handled the large accompanying layoff. This company doesn't win many points for being cuddly when it comes to cost-cutting. It usually does one large cutback, reorganizes what's left and moves on. But from a business standpoint, the approach is smart and effective. CA has a knack for acquiring companies just before they go over the brink. The last thing employees or customers need is months of agonizing over who'll stay and who'll go. Users may not like the prospect of CA acquiring one of their vendors, but the alternative — bankruptcy — is worse.

Treating software like a business instead of like some kind of celestial calling has kept CA out of the industry club. But it has also served the company well for almost 15 years and will continue to make it a force to contend with for years to come.

Gillin is *Computerworld*'s editor. His Internet address is pgillin@cw.com.

Room to grow

While the AS/400 catalog was an official channel for only five months in 1993, it was used earlier in the year on a less formal basis

1993 AS/400 REVENUE BY CHANNEL

TOTAL REVENUE: \$7.9B



Source: Annex Research, Phoenix

Briefs

Levi's data center relocates

Levi Strauss & Co.'s North America division has made it official: It will move its primary data center from San Francisco to Westlake, Texas, near Dallas. Company sources expect the move to take place later this year. Seven months after the firm said it would relocate its data center to avoid potential earthquake damage, it announced that it has

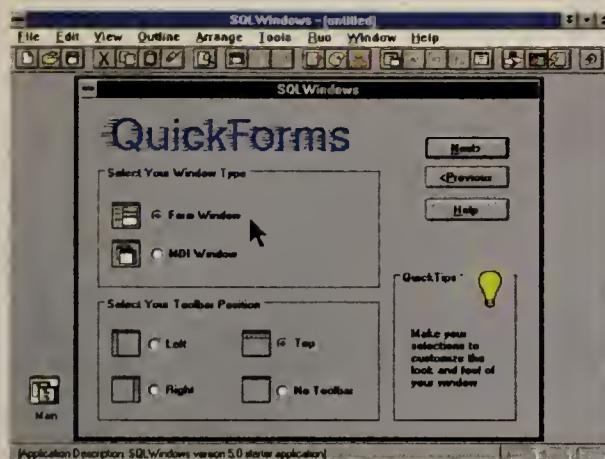
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HP Professional Services

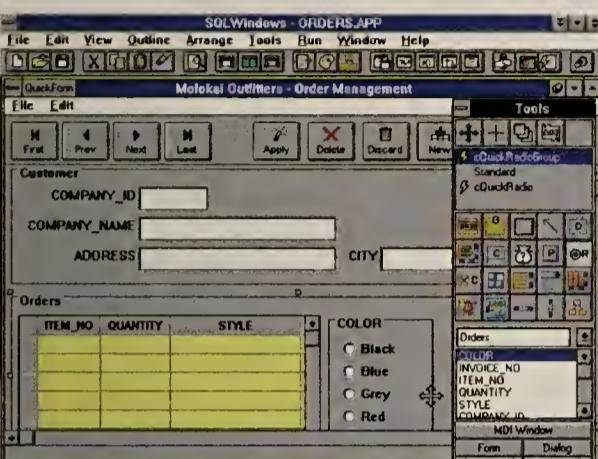
Organization. He will be in charge of consulting and systems integration.

System backs up Oracle 7

Epoch, Inc. announced that its Epoch Enterprise Backup system can now back up and restore Oracle Corp. Oracle 7 database files. The system is integrated with the Oracle Parallel Backup/Restore utility, allowing multiple data files and table spaces to be backed up at one time.

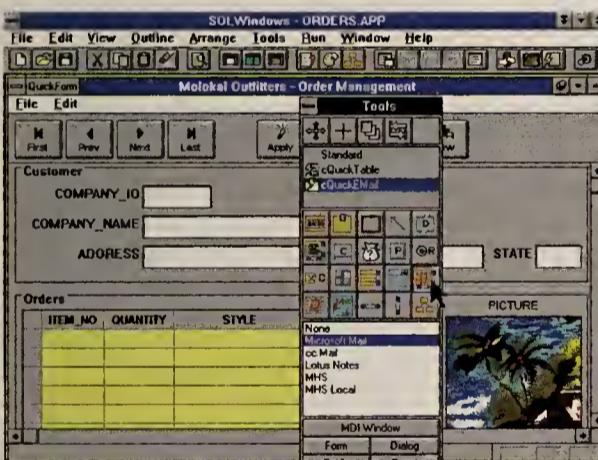


1 Relax and take a deep breath. SQLWindows® is your quickest way to build and deploy problem-solving applications just like this one. For the quickest start, choose a QuickForm to lay out your application and make all the appropriate connections.

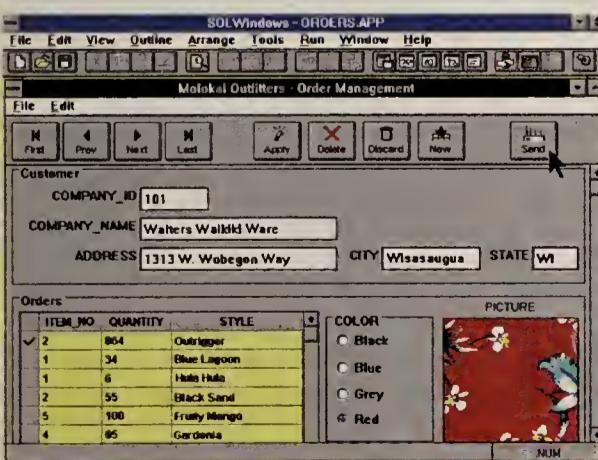


3 Next, customize your QuickForm by choosing QuickObjects from the tools palette. Each QuickObject chosen will be automatically linked to your data sources. In this case, just drag and drop a QuickRadioGroup so users can select shirt colors with intuitive radio buttons.

How QuickObjects from Gupta kept Molokai from losing its shirt.

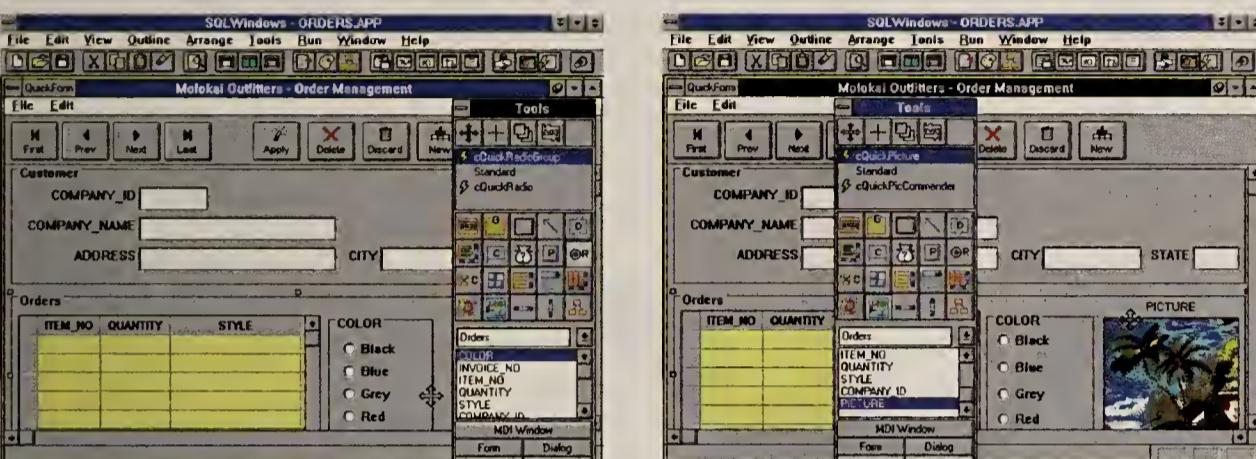


5 Painless workgroup integration is just a point-and-click away. Select the QuickEmail object, choose your mail system from the options listed and drop an e-mail data source into your form. Now users anywhere on the network can be notified when an order affects them or requires some action on their part.

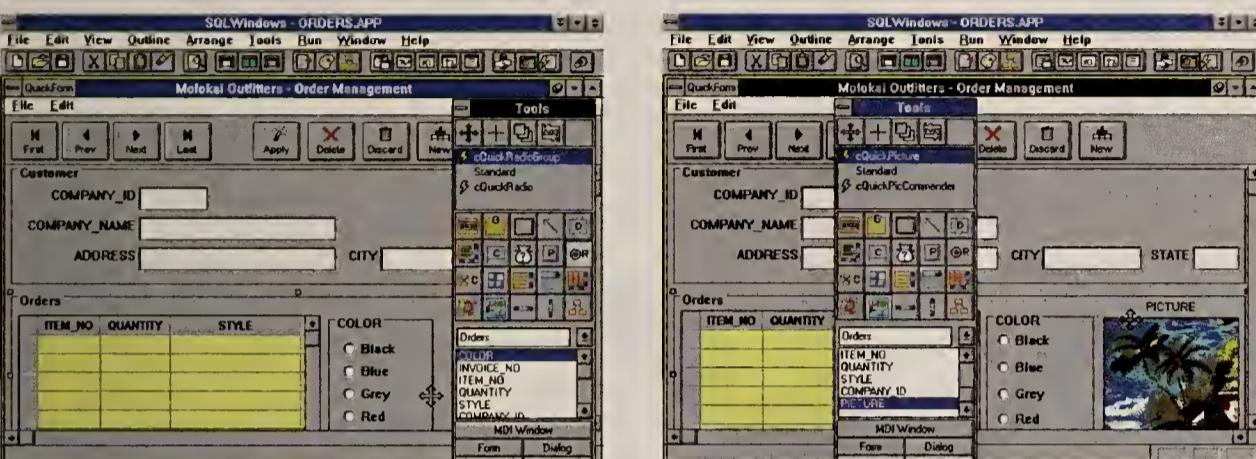


7 Now, test your application. Click on the "Run" button in the SQLWindows toolbar. Any errors will be flagged by the internal debugger and a runtime application will be created. Then, for blazing speed, just punch the adjacent SQLWindows Compiler button to tap the performance of the industry's first 4GL compiler.

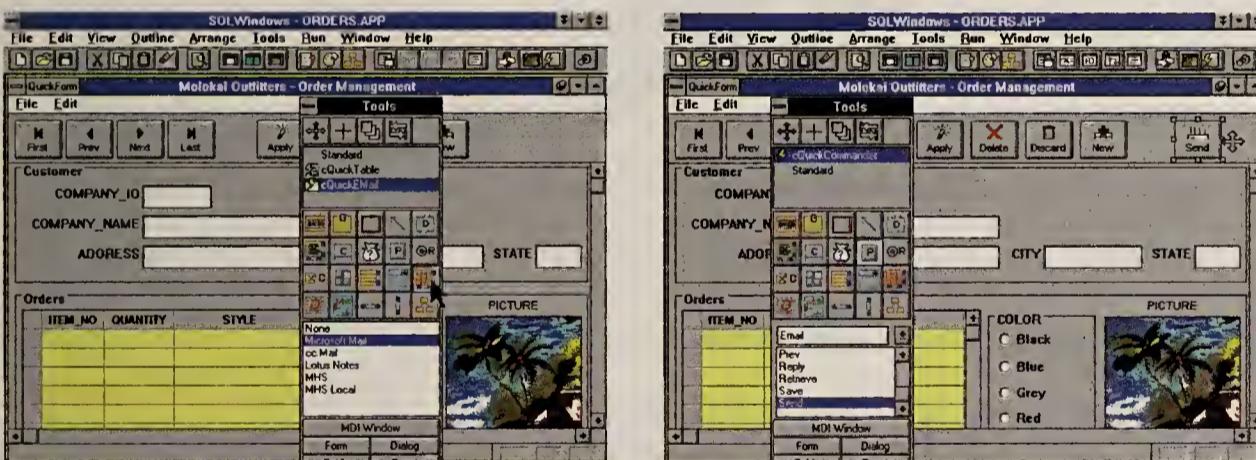
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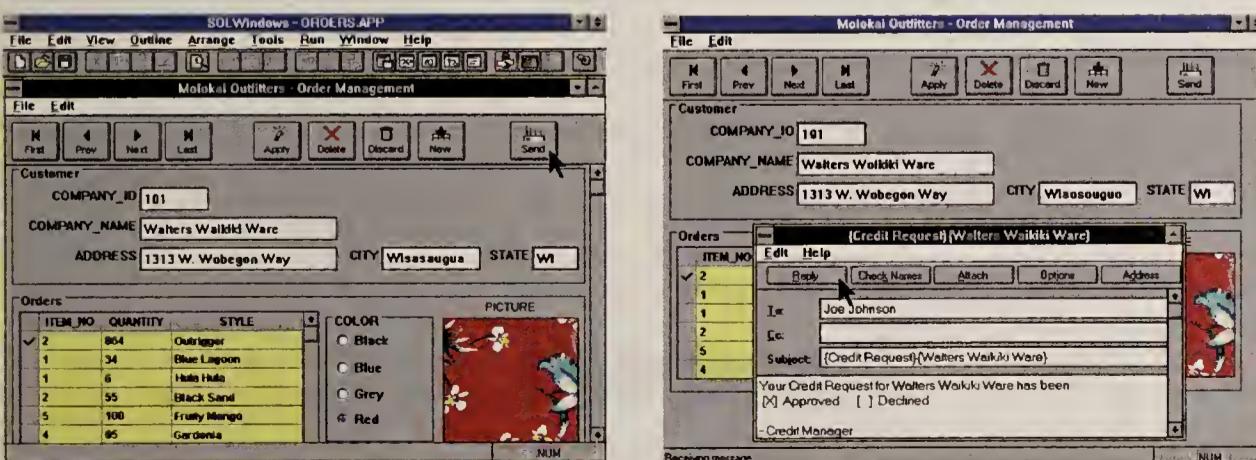
2 QuickForms let you choose data from any database, identify fields and automatically create master/detail links. A simple button click generates your QuickForm. By the way, xBASE and Paradox® data drivers are included to help desktop developers move up.



4 What good are color selections in a Hawaiian shirt company if you can't see them? SQLWindows applications can easily incorporate graphical data from any file, QLE server or database, with the QuickPicture QuickObject. Just place and size the picture box in your form. See? You still haven't written a lick of code!



6 For instance, each order will require credit approval. This calls for an e-mail QuickObject, a pre-defined pushbutton with built-in code to execute e-mail tasks. To run credit checks via e-mail, choose the "Send" e-mail QuickObject and drop a "Send" button on your form's toolbar. Now any user of the application will be able to notify the Credit Department when an order is placed and secure their approval to ship — all via e-mail without leaving the application.



8 Congratulations. You've just built a powerful client/server, mail-enabled application that integrates graphical and SQL data anyone can use. And you did it in less than 15 minutes! Now, Walter's Waikiki Ware in Wisconsin will get the 72 dozen Outrigger shirts they need by next week and you'll be modeling Molokai Outfitters' latest styles on the very beaches that inspired them.



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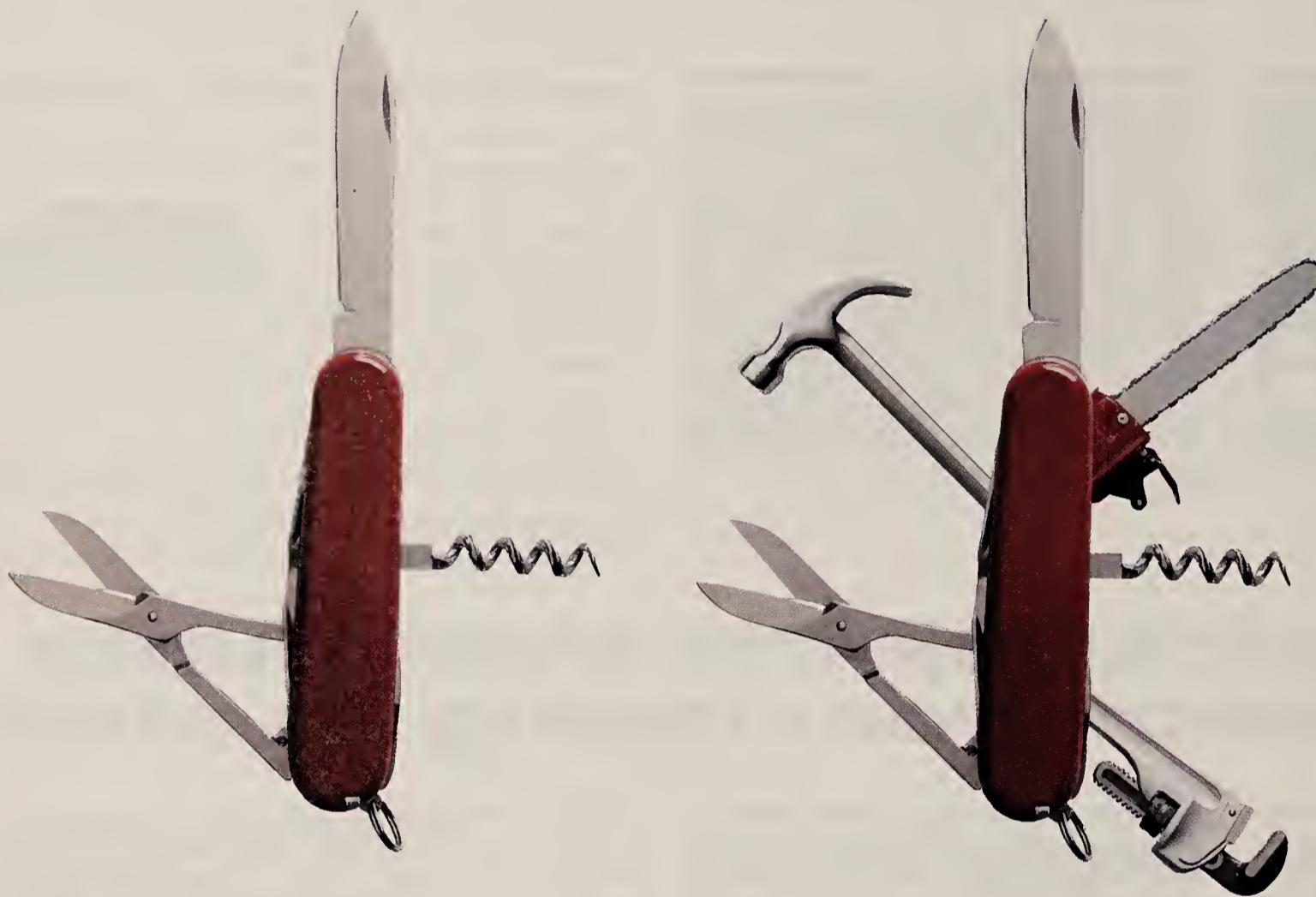


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Powersoft

Infobase CD-ROM
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Vendors spotlight CORBA products

Latest object technologies demonstrated; interoperability among processes highlighted

By Melinda-Carol Ballou

The Object World conference last week in San Francisco showcased technologies that seek to push object-oriented capabilities and the Object Management Group's (OMG) Common Object Request Broker Architecture (CORBA) into commercial prime time.

CORBA is an emerging standard that lets objects communicate with one another across heterogeneous platforms and networks.

Key technologies for commercializing CORBA were demonstrated at the show, including interoperability between CORBA and Microsoft Corp.'s Object Linking and Embedding (OLE), as well as a transaction processing specification for CORBA.



Talent showcase

Approximately 16 vendors showed off their CORBA-compliant technologies. Several others — including Candle Corp., IBM and Hewlett-Packard Co. — took the evolving standard one step further by demonstrating interoperability among different CORBA products.

For example, Candle's Omegamon systems management software running Microsoft's Windows NT made calls to CORBA products from IBM and HP running on AIX and HP/UX platforms, respectively. Candle's object request bro-

ker put out calls to the HP and IBM booths and pulled back live data to the Candle booth for viewing on Candle's OmegaView workstation.

Underpinning Candle's Omegamon and OmegaView products is a CORBA-to-OLE interoperability layer, which the company is likely to license, sources said.

Sun-compatible

Omegamon will also run on Sun Microsystems, Inc.'s SunOS, but Sun did not participate in the Object World demonstration.

Omegamon will ship by year's end on various Unix implementations and NT. Pricing will be announced at that time.

Candle, IBM and other companies have requested the CORBA 2 interoperability

specification from the OMG. CORBA 2, which is expected later this year, will enable various CORBA products to interoperate and is critical to moving the specification forward for viable commercial products.

Also key for the commercialization of CORBA is a transaction processing specification, which was demonstrated at the show by Iona Technologies Ltd. and Groupe Bull running Novell, Inc.'s Tuxedo. The specification is expected to be finalized at the OMG's meeting next month in Dublin. Consensus on the stan-

dard has been reached by nine key vendors, including IBM, Transarc Corp. and Novell.

Ole!

At the show, Iona also sought to "out-OLE" Microsoft by demonstrating its version of distributed OLE. Iona set up a Microsoft Excel spreadsheet running on a Windows PC. The PC sent out OLE calls that were translated and mapped to

with the company's XShell distributed object management environment by mid-1995. This will enable developers to distribute and manage objects, including OLE objects, and reusable components in heterogeneous environments, officials said.

Also announced were the following alliances:

- **Hewlett-Packard**'s new version of Distributed Smalltalk, which company officials said extends the earlier version of ParcPlace System, Inc.'s VisualWorks tools to create a distributed development environment.
- **Centerline Software, Inc.** announced ResourceCenter, an environment to help developers quickly and easily catalog, locate and retrieve objects and software components for more effective code reuse. Companies can begin using ResourceCenter immediately with their current code, class libraries and other reusable software assets, officials said.
- **Expersoft Corp.** announced plans to ship support for Microsoft's OLE

— Melinda-Carol Ballou

Iona's Orbix CORBA product. Orbix then carried the data across a Unix network of AIX-based RS/6000 workstations. The calls were translated back to OLE and received by a second PC running Excel.

Iona is already shipping Orbix with the ability to distribute OLE across multiple platforms, company officials said.

For its part, Microsoft last month said it will not ship distributed OLE until the middle of next year at the earliest.

Interoperability

Microsoft ups efforts to ship 16/32-bit code with Daytona

By Ed Scannell and Stuart J. Johnston

Microsoft Corp. faces a huge job in delivering by the end of September the promised 16- to 32-bit interoperability feature with its upcoming release of Windows NT Version 3.5, one manager acknowledged recently.

"There are lots and lots of 16-bit applications that we need to test," said Dave Seres, senior product manager of Object Linking and Embedding (OLE) marketing at Microsoft's systems marketing group.

Nevertheless, the company still plans to meet the deadline. "The 16- to 32-bit interoperability code is in limited beta, but right now we expect it to be in there" when Daytona ships, said Rich Tong, Microsoft's general manager of corporate and network systems. The company is providing the 16- to 32-bit links through its OLE environment.

That interoperability is crucial to the product's success, particularly with the workstation version, according to users and analysts. To ship it without such support would likely undermine Microsoft's entire desktop strategy, they said.

Users said they would need that feature to make existing 16-bit and future 32-bit applications interact, as well as for a variety of customized functions involving the automation capabilities in OLE 2.0.

Through OLE 2.0 and Visual Basic, "we can gather up different processes like batch files, third-party utilities and shareware things and execute them automatically," said Warren Smith, a certified public accountant and information systems auditor in Pacific Bell's auditing department in San Ramon, Calif.

All things considered

Some users said they would buy Daytona without 16- to 32-bit interoperability but only with rock-solid assurances that it would be delivered within a limited period of time.

"We'd only consider that because there isn't a wealth of 32-bit applications out there. It hasn't become a mission-critical situation yet for us," said Mike Drips, a technical consultant at GTE's Information Services in Tampa, Fla.



The only meaningful 32-bit Windows applications that appear to be on the horizon are from Microsoft. Versions of Word and Excel are currently in beta testing and are not expected until later this summer or early fall, according to Microsoft officials.

While Microsoft has strongly emphasized Windows NT's strengths as a server, Tong acknowledged that the product is selling as a desktop operating system more than as a server — by an 8-1 ratio. However, it is difficult to quantify how many units of the NT desktop version, called Windows NT Workstation, are actually being used as low-end servers, Tong said.

And because so many NT desktop users are power users who will likely demand industrial-strength, 32-bit applications, Daytona's 16- to 32-bit interoperability is even more crucial.

Microsoft is trying to stomp out the remaining bugs in the second beta release of Daytona and stabilize the product as it readies a Release Candidate, or "RC."

Daytona, page 60

Tufts implants decision-support system

Red Brick's databases improve data access for the HMO

By Kim S. Nash

Time was, marketeers, underwriters and anyone else who wanted to study medical statistics and patient data at Tufts Associated Health Plan, Inc. had to wait an average of eight weeks — 60 long days — for answers to routine queries of the firm's proprietary Hewlett-Packard Co. minicomputer database.

Even when information systems workers installed homegrown, PC-based decision-support system (DSS) built on FoxPro databases from Microsoft Corp., response time still took 30 days for most users.

The amazing thing is those bad old days were not so long ago. It was not until 1992 that the Waltham, Mass.-based health maintenance organization decided to go whole hog on decision support. Then Tufts brought in new technology — a database that was yet to be built — and hired another manager dedicated solely to making data as reachable as a cup of coffee from the company's cafeteria.

"They didn't call it 'decision support' back then. They just knew that they wanted to access data more efficiently than they had been," said Patricia Donovan, Tufts' manager of decision support.

Lengthy effort

Donovan worked with end users and developers last year to create the FoxPro-based DSS that trimmed reporting time to one month. But even then, Donovan could see that the solution was temporary.

"Thirty days is still inefficient when you're trying to answer questions," she said. "It might even have prevented people from submitting requests because they

didn't have time to wait."

Further, at 2G bytes and growing, Tufts' corporate data demanded a more industrial solution.

The FoxPro setup had users downloading either summaries of 2G bytes of data or the raw data itself to individual PCs during each query session. But chunks of information that large cannot be summarized without losing something in the translation, Donovan said. Plus, outfitting every potential user with enough local disk space for that much data would have been costly.

She declined to specify how much money Tufts spent on its FoxPro solution or later efforts. However, money for the project came out of Tufts' central IS budget rather than from each department that received a piece of the DSS, Donovan said.

Evasive maneuvers

To avoid the wall that IS saw fast-approaching, Tufts turned to Red Brick Systems, a database vendor in Los Gatos, Calif., that specializes in DSS.

Although the IS staff had yet to design or deploy the Red Brick product, that selection was virtually given by the time Donovan came on, leaving no time to experiment with other database options such as those from Oracle Corp. or Sybase, Inc.

Also, Red Bricks' then-current Release 1.5 of its namesake database lacked several features Donovan deemed imperative, such as multiple ways to ask questions and look at data.

Initially, "I was concerned," Donovan said. But several meetings with Red Brick managers and demonstrations of the product, as well as discussions of planned enhancements for Release 2.0, eased her mind, she said.

Unlike Oracle or Sybase, Donovan noted, Red Brick is completely committed to DSS. Other vendors must also satisfy users doing on-line transaction processing, whose database design often conflicts with that of DSS setups.

Taking a chance

Still, some would call it risky to count on a software product that has not even been built yet. But Donovan maintained that Tufts all but eliminated the danger by negotiating a contract with Red Brick that let Tufts refuse to buy from the vendor if Release 2.0 was not up to snuff.

For example, Tufts wanted Red Brick to expand the number of allowable database rows from about 40,000 in Release 1.5 to more than 340,000. That way, the HMO could designate an individual row for each of its 340,000 members, which is a logical way to separate a database, Donovan said.



Tufts' Patricia Donovan: Red Brick satisfied the HMO's needs

In-house developers at Tufts had to manually write a data migration tool to move corporate data from Tufts' existing HP 3000 minicomputer to an HP 9000 Unix box. But IS no longer hand-codes end-user report requests in Cobol or HP's proprietary fourth-generation language. Instead, end users pluck through menus and icons in Forest and Trees, a graphical, PC-based data access tool from Trinzie Corp. in Palo Alto, Calif. Forest and Trees, in turn, accesses both summary and raw data on Red Brick.

Donovan first deployed the system to two users from Tufts' underwriting and marketing departments because they already had PC experience. And starting small was important because a simpler rollout meant IS could more easily get its arms around trouble, she said.

Now, a total of 28 users from underwriting, marketing and two other units — provider unit managers and research and evaluation — access Red Brick. Twenty to 25 more users are scheduled to be added by year's end.

Daytona

CONTINUED FROM PAGE 59

While Tong declined to discuss sales figures for Windows NT 3.1 to date, he said he regrets his company's prediction last year that it would sell 1 million units in the first year of availability. Most analysts believe it has sold less than half that figure.

"The worst thing we ever did was to talk about numbers for NT," Tong said.

At the same time, however, Microsoft is trying to steer ultrapower users away from Windows and toward Chicago, which is now due early next year.

The client version of Daytona will be for users who need to run high-end applications, such as engineering and financial programs, on machines that have at least 16M bytes of RAM or that need NT's advanced security features.

Users who want to run a mainstream desktop operating system, existing 16-bit Windows applications or the new 32-bit applications will be steered toward Chicago. That operating system will also sport the 16- to 32-bit OLE interoperability code when it ships, said Brad Chase, general manager of Microsoft's Personal Operating Systems group.

New Products

Superbica has introduced C++ Coder, a tool for Windows that automatically generates C++ applications that run under Windows or OS/2.

According to the Astoria, N.Y., company, C++ Coder can generate database and calculator programs and C++ class libraries.

Users prepare simple tables describing each record in the application, and the product generates the code, up to 50,000 lines at a time.

C++ Coder comes with a test file generator, an automatic screen design feature and an automatic documentation system that lets users create manuals up to 20 pages long.

C++ Coder costs \$500.

► **Superbica**
(718) 728-5115

Astea International, Inc. has announced AsteaObjects Library, a tool kit for Powersoft Corp. PowerBuilder developers.

According to the Chalfont, Pa., company, AsteaObjects Library lets developers design applications that have

the same look and feel and behave consistently across different development projects.

Developers can integrate the schema definition and attributes of their applications' data windows, define databases with already-created tables, standardize definitions, eliminate duplication, define commonly used elements, generate SQL scripts and customize applications.

Features include an enhanced multilingual data dictionary, dialog and control boxes, selection lists and user and optional objects.

Prices range from \$3,000 to \$20,000, depending on the number of users and options.

► **Astea International**
(215) 822-8888

WorkGroup Solutions, Inc. has announced FoxKit for Flagship, a Microsoft Corp. FoxBase compatibility kit for WorkGroup Solutions' Flagship product.

According to the Aurora, Colo., firm, FoxKit for Flagship lets users move FoxBase applications to Flagship, an Xbase fourth-generation language database development system, and Computer Associates International, Inc.'s

Clipper and Xbase compiler for Unix.

The product provides FoxBase programmers with access to more than 50 versions of Unix supported by Flagship to take advantage of multitasking, multiprocessing and speed improvements without any memory limitations.

FoxKit for Flagship costs \$150.
► **WorkGroup Solutions**
(303) 699-7470

Virtual Prototypes, Inc. has announced Vaps 3.1, a tool set for building and deploying real-time graphical interfaces.

According to the Montreal company, Vaps was designed to automate all phases of the real-time graphical interface development process.

Users develop the interfaces with a set of editors supporting an object-oriented approach. The product automatically translates the graphical prototypes into C code.

The interfaces created with Vaps 3.1 let users interact with the application via graphical representations of real-world objects.

Prices start at \$16,500.
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IS executives are hot to trot out pay-for-performance compensation schemes. But do they really know what they're doing?

Does anyone know how to play this game?

BY JULIA KING

A \$60,000-a-year information systems manager at Cincinnati-based Community Mutual Insurance Co. could end up earning as much as \$67,500 this year. Whether he actually does will depend on how successfully he cuts costs and reduces system errors during production runs.

At Xerox Corp. in Rochester, N.Y., IS managers who meet preset performance goals stand to pocket an extra 10% of their annual salary. If they fail, they could end up losing 5% of their pay.

Welcome to the brave new world of pay-for-performance, where an increasing number of IS organizations are experimenting with paying managers and staffers based on the quality of their work and contributions to their company's business goals, rather than on their seniority or job level.

The idea of getting what you pay for certainly isn't new in IS circles or anywhere else. For years, chief information officers have been under pressure to deliver high returns on investments in hardware and software. Now, they're also being called on to do the same with people, which is one of the main drivers behind many of today's pay-for-performance compensation programs.

The trend toward pay-for-performance "is symptomatic of an overall need for greater cost-effectiveness in IS," says George Florit, president of Michael Delia, Inc., a San Diego information technology management consultancy.

"There's a realization that no matter how much magnificent hardware and software is developed, in the end, it's people who make the difference."

IS professionals at all levels seem to agree that pay-for-performance is indeed a good idea. But how to execute that idea is another matter altogether. Conspicuously absent from the scene is any one formula that managers agree on across the board. Several questions remain unanswered.

How, for instance, should performance be defined, and who should measure it and how? Should individual members of the same development team be rewarded differently? How should CIOs measure user satisfaction, which increasingly is being used as a barometer of their own organizations' value? Do performance-based pay programs encourage staffers to produce better systems?

Potential pitfalls are also plentiful. They include inadvertently inciting professional jealousies, rewarding IS staffers based on poorly defined or fuzzy performance criteria and giving workers the message that everything short of total success is of little or no value to the organization.

If pay-for-performance is to work effectively, "there must be very clear criteria for good performance," says Naomi



ANDY SNOW

COMMUNITY MUTUAL'S BILL EAGER believes in financially rewarding high performance, which is largely determined by peer assessment

Karten, president of Karten Associates, an information technology management consultancy in Randolph, Mass., and a former IS manager. "But within the [information technology] field, I don't think we have a clue what that is."

Many CIOs are making efforts to find out. They have to. With personnel costs eating up as much as 65% of the average IS budget, IS executives say the pressure is greater than ever to deliver the highest value for every dollar spent on staff.

One way Xerox's IS management is aiming to deliver that value is by giving users what they want, when they want it and at the lowest possible cost, according to Bob Monastero, director of human resources at the company's global information management organization.

Under this scenario, Xerox's top IS managers are required to place 5% of their annual salary at risk in exchange for the opportunity to earn back that salary plus 10%. But in order to get the big bucks, IS must meet certain predefined goals, and the company as a whole must achieve its overall financial goals. The twin targets work to ensure that IS goals are

Pay-for-performance, page 64

Get a GRIP

A Colorado Springs utility hopes its new bonus program will keep IS and other personnel on target

Aligning departmental and overall company goals is the primary objective of a new incentive pay program at City Utilities, Colorado Springs' water, gas, electric and wastewater services company.

Established Jan. 1, the Group Recognition and Incentive Program (GRIP) establishes both departmental and companywide goals for all employees, including 100 IS staffers and managers.

Among these is resource management systems manager Don Wilaby, who could pocket an extra \$750 this year, depending on how well he and his co-workers stack up against newly established IS performance benchmarks and other companywide performance measures. Wilaby is also a member of the committee of staffers and managers who set goals and oversee the program.

IS benchmarks focus on system availability and reliability, customer service and professional training, all of which were chosen during the program's first year "because they're all fairly easy to quantify," Wilaby says. Under training, for instance, IS set a goal of 47 hours for each IS employee during the first nine months the program is in effect.

Companywide, employees are measured in terms of their contributions to the organization's affirmative action and environmental goals, among others. For all employees, half of the bonus is based on departmental goals, and the other half is based on utilitywide goals.

This is not a percentage increase system. Rather, the \$750 is a flat dollar amount available to all employees, ranging from \$8,000-a-year construction workers to \$100,000-a-year utility directors, Wilaby says.

"The whole purpose of the program is to get everyone in line with the management objectives of the company," he explains.

To this end, the same maximum

bonus amount is available to each person within the company, but amounts awarded can vary between staffers in different departments. For example, staffers in the IS department and staffers in the customer service department may all meet companywide goals, which is one-half of the total available bonus money, or \$375. But if IS staffers do better than customer staffers in meeting departmental goals, IS staffers earn more of the remaining \$375.

"Today, just having a target is a bigger motivator than the additional pay. In fact, we set the amount of money intentionally low to start with because it isn't necessarily the biggest motivating factor."

-DON WILABY
Resource management systems manager

In many cases, Wilaby says, one department's performance will affect how well another department is able to meet its goals. For example, customer service workers can perform their jobs satisfactorily only if the information systems they need are available to them. GRIP has been architected in such a way to reflect this. From the outset, Wilaby says, GRIP committee members were intentionally vigilant about making sure different departments' goals were comparable and reachable, to avoid political tensions between workers in different areas.

"We won't know until the end of the year, but we feel fairly comfortable that one department will not have it easy to get \$750 while another will really have to struggle to get half that amount," he says. "We tried to create a fairly supportive environment."

How well the program works has yet to be determined because it is not yet a year old. But Wilaby is optimistic. "Today, just having a target is a bigger motivator than the [additional] pay," he says. In fact, "we set the amount of money intentionally low to start with because it isn't necessarily the biggest motivating factor."

"Our real focus is getting employees and departments to set targets and measurements and to see how well they do. The money is a reward for doing these things," Wilaby says.

Pay-for-performance

CONTINUED FROM PAGE 63

aligned with overall corporate goals.

For IS, the goals might include reducing costs or meeting strict deadlines on projects that business management has classified as top priority.

In four out of the last six years that the program has been in place for top IS managers, the managers have earned a return on investment exceeding the 5% buy-in price, Monastero says. The other two years, IS managers received less than their 5% ante, primarily due to weak financial performance companywide.

Despite the inconsistent returns, the program has been welcomed by employees, Monastero says. Last year, for example, first-line managers who had not previously been included in the program were brought in at their own request.

These "managers had seen very senior people have this scheme for years and felt excluded," Monastero says.

At the same time, it must also be noted that Xerox does furnish managers with incentives to buy into the program. For example, the company pays managers in their first year in the program the full 10% return on their 5% at-risk investment, regardless of whether the company meets its financial goals.

Using peer assessment

Under a second peer assessment program now being tested within what Monastero describes as a small, "self-empowered workgroup," IS staffers have a direct say in how much their co-workers should receive in annual bonus pay and merit increases.

"Peer assessments are perceptions of group members' contributions by other members of the group," he explains. These perceptions can in turn influence as much as 50% of a worker's pay increase. The other 50% is based on Monastero's assessment. Because the program is in test mode, Monastero has yet to measure its value in terms of improving systems or forging a team-oriented approach to IS projects.

At Douglas Aircraft Co. in Long Beach,

Calif., IS staffers' annual bonuses and merit increases also are tied to peer assessments, but the evaluations are conducted outside IS by users.

Survey says

"We do telephone surveys [of users] — one-on-one surveys and paper surveys — and when an IS person delivers a product to a customer, they immediately give them a paper survey," says Pauline Nornholm, general manager of IS. Results of these surveys and additional telephone and one-on-one user surveys are then weighed by Nornholm, along with certain functional performance criteria, such as systems uptime, to determine what level increase a staffer receives.

From time to time, Nornholm says, she also awards discretionary bonuses, which can amount to between 7% and 10% of a staffer's annual salary. These can be given to either an individual or a team for accomplishments such as meeting a tight deadline on a critical project, such as the document management system recently brought up at the firm's headquarters.

Community Mutual CIO Bill Eager also solicits feedback on IS performance via a 40-question survey developed by IS managers. The questions, which among other things "relate to employees' attitudes and supportiveness of team members," are answered by IS staffers and their counterparts in business divisions who work together on project teams. Results influence 75% of IS employees' performance rating and merit increase, which can range between 2% and 7% of their salary.

"Some managers wanted to use 100%, but I think you need to keep some management discretion in the rating," Eager says. This, he explains, is because the "survey process can be a little bit capri-

cious, depending on who surveys are distributed to and how they feel on that particular day."

Such subjectivity aside, user surveys can still be valuable for assessing IS performance and for securing management support for the overall IS function, says DuWayne Peterson, president of DuWayne Peterson Associates, a consulting firm in Pasadena, Calif. He is the former CIO at Merrill Lynch & Co. in New York.

As for assessments by one's IS peers, Peterson says, "their value depends on a company's culture. If you have a cut-

CUC International, Inc.'s Comp-U-Card division in Columbus, Ohio.

The problem with using metrics for software development is that by nature, the work cannot be measured the same objective way that producing widgets in a manufacturing plant can, Fisher says.

"The danger with function points is that they are still an objective rating," he says.

No punishment

Another big difficulty lies with pay structures under which employees receive bonuses only for successful projects, Fisher says. In his opinion, such structures punish for failure.

"And I don't want to punish for failure," Fisher says. "I would rather reward [staffers'] efforts because I want them to try to do their best and to learn from their mistakes." People should be rewarded for learning from their failures as well as their successes, he says.

The bottom line is that for now, many IS organizations are doing just that — learning from their early experiences, both good and bad, with various pay-for-performance techniques, says Robert Zawacki, an IS management consultant

at KPMG Peat Marwick in Denver.

"Pay-for-performance is new to everybody," Zawacki says. "The first hurdle is breaking out of traditional thinking about job descriptions and looking at [individuals'] competencies." IS organizations are "no better or worse off than anyone else" in trying to get over that hurdle, he says.

Yet get over it they must, experts say, because as imperfect as pay-for-performance may now be, economics dictate that it is here to stay.

King is a *Computerworld* mid-Atlantic senior editor.

Pay-per-performance

COMPANY	LEVEL	COMPENSATION
Xerox Corp. Rochester, N.Y.	IS management	5% of salary at risk, with potential to earn 10% over salary in bonuses if employee meets preset performance goals and the company meets financial goals.
Community Mutual Insurance Co. Cincinnati	IS management	Results of performance survey influence 75% of employees' merit increase, ranging from 2% to 7% of their salary.
Douglas Aircraft Co. Long Beach, Calif.	All IS staff	Ties annual bonuses and merit increases to peer assessments; also gives discretionary bonuses of 7% to 10% of annual salary.

throat culture that's very competitive, forget it. [Assessments] could be used just to stab someone in the back. Then again, a lot of times they become very watered down into an 'I'll scratch your back if you scratch mine' situation."

But that's just one of several pitfalls with pay-for-performance programs. Another, observers say, is applying unsuitable performance measurements, such as lines of code written or number of screens produced.

"I think pay-for-performance is a great idea, but our industry is still struggling with the metrics," says Jeff Fisher, vice president of software development at

AUG. 14-20

Software Marketing Perspectives '94. San Francisco, Aug. 14-17 — Focus: Strategies and tactics of marketing business-to-business software. Contact: Conference Information Line, (415) 989-8765.

Washington Interactive Multimedia '94. Washington, Aug. 17-19 — Contact: Society for Applied Learning Technology, Warrenton, Va. (703) 347-0055.

The On-line Networking Exposition and Bulletin Board Service Convention. Atlanta, Aug. 17-21 — Contact: One, Inc., Aurora, Colo. (303) 693-5253.

AUG. 21-27

Partnership Conference '94. New Orleans, Aug. 21-24 — Contact: Computer Associates International, Inc., Islandia, N.Y. (516) 342-5224

Cyberspace and the American Dream. Atlanta, Aug. 23-24 — Con-

Calendar

taet: The Progress & Freedom Foundation, Washington, D.C. (202) 484-2312.

Data Administration & Information Resource Development. Washington, Aug. 24-26 — Speaker will be Ronald G. Ross, editor of the "Database Newsletter," published by Database Research Group, Inc. Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

AUG. 28-SEPT. 3

Client/Server '94 East. Washington, Aug. 29-Sept. 1 — The conference will focus on users ranging from business executives to technical managers and value-added resellers and integrators. Contact: CMP Publications, Inc., Jericho, N.Y. (516) 733-6700.

Effective Methods of Systems Testing. Orlando, Fla., Sept. 1-2 —

Part 2: Process for Test Execution. Contact: Quality Assurance Institute, Orlando, Fla. (407) 363-1111.

SEPT. 4-10

Manufacturing '94. Chicago, Sept. 7-14 — Topics include networking, cost-cutting, quality improvement and technology integration. Contact: Society of Manufacturing Engineers, Dearborn, Mich. (313) 271-1500.

Video Expo/Image World. New York, Sept. 9-14 — Focus: Seminars on emerging technologies, desktop video, computer graphics and animation, corporate media production, multimedia and digital imaging and publishing. Keynotes: "Beyond Reality — New Frontiers in Computing Imaging," by Dr. Alvy Ray Smith, co-founder and president of Altamira Software Corp.; "Non-Linear Editing — Cutting Through the Hype," by Shonan Noronha, editorial director of *AV Video* and *Computer Pictures*; "Freedom, Privacy and Creative Property Rights in the Digital Age," moderated by John Rhodes, communications consultant. Contact: Knowledge Industry Publications, Inc., White Plains, N.Y. (914) 328-9157.

Just-in-time Networking

By Joseph Maglitta

Thanks to a massive re-engineering effort by Bell Canada, "call waiting" is an optional service and not a frustrating fact of life for millions of telephone customers in Ontario and Quebec.

Faced with growing long-distance competition since 1992, Canada's largest telecommunications company is reinventing the way it delivers voice, data and video services such as call waiting, caller-ID, Asynchronous Transfer Mode and Integrated Services Digital Network to its two operating companies and, ultimately, to its customers.

Officials at the \$3 billion Montreal-based company say the re-engineering anchors a new strategy to make it faster and easier to expand service based on market demand, not long-range forecasts. They say the shift eliminates lengthy waits and will blunt growing threats by Unitel and other powerful new rivals.

"Network provisioning used to take up to 18 months. Now it takes an average of 20 days," says Ray Hing, general manager of business process re-engineering at Bell Sigma Telecom Solu-

tions, Inc. The Toronto-based technical arm of Bell Canada led the project and was spun off as a commercial IS services provider last year.

In the past, Bell's century-old monopoly and notorious bureaucracy made adding unplanned telephone capacity or services a slow, expensive, paper-driven affair. Each order for a telephone switch or peripherals such as multiplexers had to be custom-configured, Hing explains.

But two years ago, the Canadian government opened long-distance service to competition. Today, a host of powerful Canadian and overseas firms, backed by AT&T Corp. and Sprint Corp., are aggressively vying for the \$20 billion market.

Canada's newly open long-distance market has attracted the interest of big U.S. telephone companies. Unitel Communications, Inc. is backed by AT&T, and another major force, Callnet, is backed by Sprint. MCI Communications Corp. has a partnership with Bell Canada.

Shaping up

With competition looming, in 1988 Bell Canada formed a team to overhaul network delivery, from order entry to on-site equipment setup. The effort eventually involved hundreds of employees at Bell and Northern Telecom Canada Ltd., its equipment supplier.

Re-engineers simplified the back-end process, reducing the number of orderable parts from 4,000 to fewer than 200. Moreover, 289 software-driven features such as Centrex were grouped into 59 modular sets that would be preloaded onto each system. To support the revamped process, key functions such as network planning, budgeting and billing were shifted from an IBM mainframe to an IBM RS/6000-based "Integrated Provisioning System."

The first "Just-in-Time" network delivery was rolled out in 1990. The later phase called 3D—short for Demand Driven Deployment—begins next month.

"The idea is to develop an infrastructure that allows you to be poised for whenever and wherever demand occurs and to activate the process as it is needed," Hing explains.

Another innovation: Northern Telecom DMS100 Super Node electronic switches are now shipped to sites with a "universal software load." This contains all basic programs as well as advanced services such as call waiting and caller-ID. A stock of 96M-byte memory boards are warehoused on-site and installed as needed to handle the extra software-driven functions.

Backers say the "pay-for-what-you-use" approach benefits customers, suppliers and the phone



Bell Ontario and Bell Quebec needed a faster way to deliver ISDN, caller-ID and other new services. The solution: Re-engineer how telephone networks are ordered and delivered.

companies themselves. Shipping preconfigured units helps avoid tying up valuable staff resources and capital, says Jean Salinas, general manager at Bell Quebec.

He adds that the new approach let Bell Quebec trim 70 jobs and divert \$20 million in capital spending to other projects last year. Similarly, Bell Ontario says it was able to reroute \$32 million in capital spending last year and hopes to do so each year.

Other benefits include the following:

- **No more price quotes.** Because switch prices and configurations are now standard, there's no need for complex cost quotations, says Dan Bednis, project manager at Bell Sigma. Gone too are lengthy delays and paperwork associated with ordering extra switch memory.
- **Marketing people freed.** Some technical and marketing employees used to spend 30% to 40% of their time deploying new systems. That has been reduced to zero, Hing says.
- **Productivity boosted.** Thanks to the new, simpler process, one group was able

to increase the number of provisioning jobs it handled last year from 300 to 500, according to Hing.

Ray Hing and Dan Bednis, Bell Sigma's re-engineering leaders, build convincing prototypes and deliver incremental functionality every four to six months

Michael Sone, president of NBI, a Toronto-based telecommunications research and consulting company, says speedier service rollout will help Bell Canada keep pace with its new competitors.

But, he adds, "Bell Canada has actually surprised a lot of people with how quickly they have reacted" to the newly open market.

As a result of the initial project, Bell Sigma is marketing the approach, in addition to its re-engineering services, to other Bell operating companies. Hing says his team is shooting to reduce provisioning time to five days. Next project: network delivery of software upgrades.

"We can't afford to wait any more" to speed up service delivery, Salinas says. "The competition will be all over us."

Maglitta is *Computerworld*'s senior editor, corporate strategies.

Hints from Hing

As a civil engineer whose work includes stints in Middle East oil fields, Bell Sigma's **Ray Hing** sees parallels between building and re-engineering. "You need a solid foundation," he says. "And you need to understand where the weak links are."

Hing offers other tips from his half-dozen years of heading re-engineering projects:

1. Get rid of the notion that you have to plan everything down to the nth degree. As long as you feel you are heading in the right direction, keep on moving.
2. Shoot for rapid staged implementation, not endless planning and flawless execution. Build convincing prototypes and deliver incremental functionality every four to six months.
3. Don't pontificate. People aren't stupid. You have to do things in a way people feel comfortable with.
4. Let people who run the jobs, not corporate staffers, do the piloting.
5. Work within the system.

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April 11, 1994, Vol. 28, No. 15, 174 Pages, \$6/Copy, \$48/Year

COMPUTERWORLD

PC software takes next step

Downside to suites refuels interest in best-of-breed applications

By William Brandel and Ed Scannell

After paying a single-product price for application suites and reaping the benefits of integrated software, more business systems managers are deciding they want the option again of buying best-of-breed applications. In short, users want to have their cake cheap but leading-edge software and eat it, too. And margin-preserved IS software vendors are scrambling to serve it up with new packaging and licensing terms.

Since their advent more than two

years ago, application suites discounted bundles of applications have sold quite well. In fact, sales have more than doubled over the past year, according to International Data Corp., a market research firm in Framingham, Mass. Some industry research figures cite more than \$3 billion in suite sales during 1993.

As the market matures, however,

the IS community is beginning to see a downside to suite offerings from various parts of the suite. Latin American Corp., Latin Development Corp. Suites, page 15

Industry turning to components

By Ed Scannell and William Brandel

Bulging IS applications and shrinking profit margins are forcing major software developers to have a look at component-based architecture, which promises to cut development costs and speed delivery of cheaper, more innovative products.

An emerging object technology crosses paths with corporate users' impatience over methods for upgrading applications. (See story at left.) This new building-block approach will empower information systems shops to create their own applications with readily available components. Our primary goal is to move out applications.

Suites, page 15

Proven hand to guide Novell

By Elizabeth Horwitz

Novell Inc. last week confirmed it is handing over its reins to Hewitt Packard's Executive Chairman, Robert L. Frankenberg, who is said to be an experienced fighter, innovator and strategist. Industry observers agreed those are precisely the qualities Novell's stockholders need. Novell's highly diversified and fragmented product lines into a winning strategy in battle with what



information systems executive called "the operating system wars of 1990." Frankenberg will take over from current President and CEO of Executive Officer, Bill Novelli, who said he will lend a hand "only when asked."

At the same time, Novelli announced that the Office of the President, which directed Novell's day-to-day operations during the past less than a year, will be disbanded.

Novell, page 10

Open Systems

Oil pilot strikes savings

By Jean S. Bowman

The oil industry took a giant step last week toward creating open systems for information processing.

Now at the end of its three-month long, \$500,000 industry pilot project, the Petrochemical Open Software Corp. will ask 150 software vendors to port their applications to a common data model or standard.

At the same time, a second PUSI test will start in June.

Seven of the world's largest oil firms — each



by 30% to 50% in three years by using open systems and standards.

Oil, page 10

Making the strategic choice

Overhyped promises, slow delivery, endless repositioning. These are facts of life in the operating systems market. Our Guide to NT vs. Unix vs. VMS cuts through the hype with an analysis backed by a 400-user buyer's satisfaction scorecard survey and a firing line review of Solaris 2.3. See the Guide, Page 91

SCALABILITY
INTEROPERABILITY
NT
Based on interviews with 400 users
Score of 100 where NT is best

Newspaper

Tax Systems Modernization Project

IRS turns to imaging to improve performance

By Harry H. Barnes

Washington

The Internal Revenue Service in mid April will begin a massive paper-shake-out, allowing 100,000 tons of paper to flow into IRS processing centers this week, and all of it must be hand-sorted, batched, numbered and keyed before any computer processing can begin.

The IRS is counting on recent advances in technology to eliminate the paper chase and with it, the bottleneck that slows the receipt of your tax refund. By whittling away at



the labor-intensive error-prone paper-handling and data-entry activities, the agency says it can deliver the performance improvements the public demands.

During the next several years, the agency will roll out imaging and automated character recognition on a grant scale. Fundamentally, it hopes to substitute electrons for 2.5 billion pieces of paper annually while knocking at least a week off the time taxpayers have to wait for their checks.

Tax, page 10

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COMPUTERWORLD

All that glitters...

Multimedia tools have created high expectations, but don't hope for too much too soon. First attempts are often amateurish, and the learning curve is substantial.

SEE MARKETPLACE

MULTIMEDIA COMES DOWN TO

the 1994 World Cup Soccer tournament used it to track 1,700 athletes and deliver images of players on badges. The Air Force Academy uses it to teach languages to 1,200 foreign students. Major real estate firms use it to remotely walk clients through properties, and the Federal Aviation Administration uses it to train and test more than 8,000 employees each year. What is it? Multimedia, of course.

The almost-too-good-to-be-true notion of three-dimensional animation, stereo sound, brilliant photographs, graphics, full-motion video and text-and-touch-screen control has finally come down from the clouds, landing firmly—but not necessarily smoothly—in corporate information systems. The bumps include start-up costs and multimedia system demands. Once those are cleared, you can move ahead in the selection of authoring tools (see story below).

Multimedia, page 70

AUTHORING TOOLS: YOU TAKE THE HIGH END, AND I'LL TAKE THE LOW END.

Slick multimedia authoring tools that essentially spare users from complex application development are gaining a strong presence in the market. Revenue, which reached \$413.1 million last year, is projected to climb to \$1.38 billion in 1996, according to a recent Frost & Sullivan, Inc. survey.

But choosing a tool to pull together all of the elements that go into multimedia applications—audio, computergraphics, fonts, video and animation

—is not such a daunting task. Your selection depends on your level of expertise and the kinds of

Authoring tools, page 70

BEST AND WORST

200 users of high-end and midlevel multimedia authoring tools registered their feelings in our Buyers' Scorecard, page 74.

USERS ARE MOST HAPPY WITH:

- APPLICATION QUALITY
- VALUE FOR THE DOLLAR
- ABILITY TO BUILD COMPLEX PROGRAMS

USERS ARE LEAST HAPPY WITH:

- DATABASE ACCESS
- RESPONSIVENESS OF SERVICE
- INTEROPERABILITY WITH OTHER APPLICATIONS

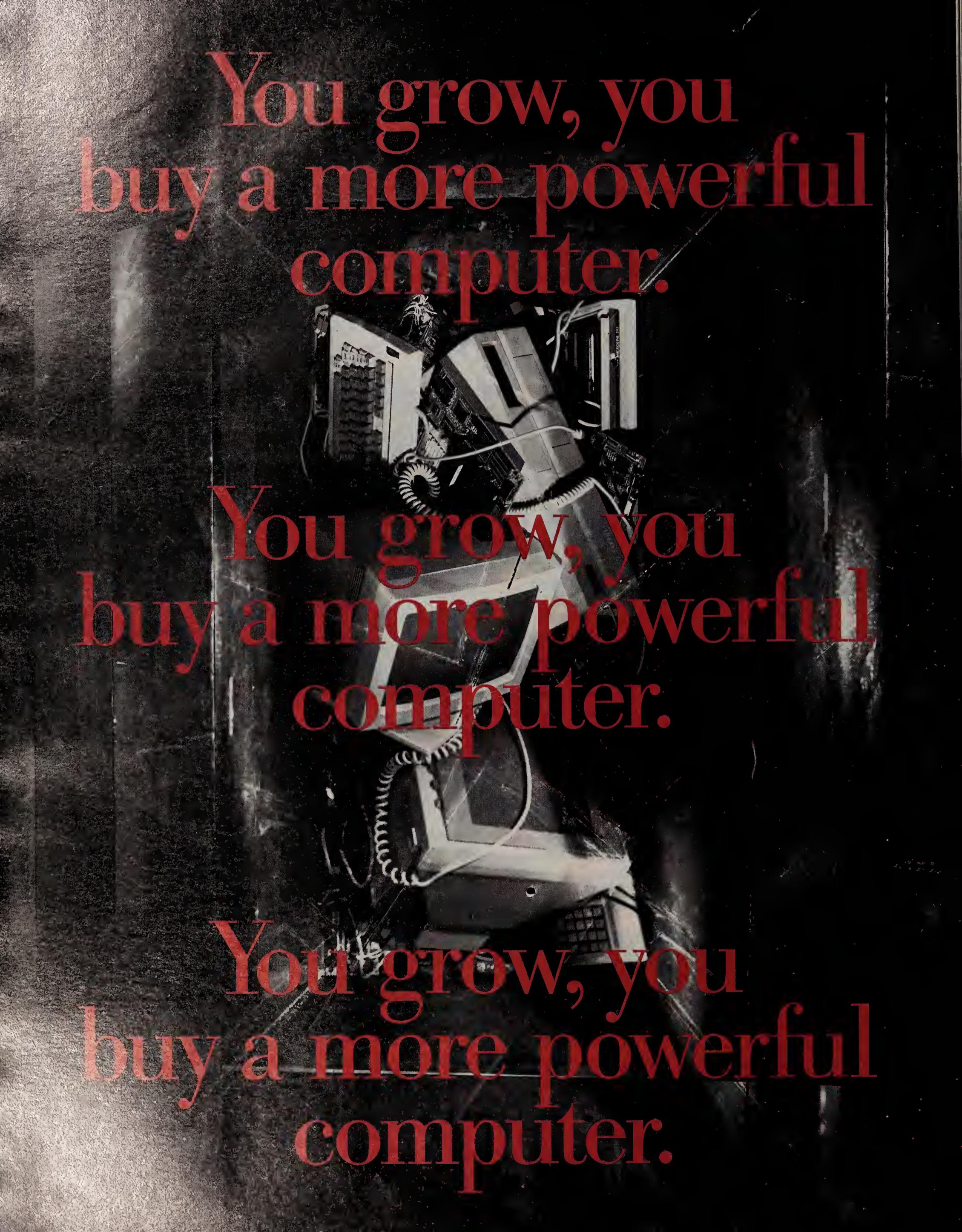


ANDREW FAULKNER

EARTH

But steep start-up costs and system demands trip up a smooth landing

By ELIZABETH WOOD



You grow, you
buy a more powerful
computer.

You grow, you
buy a more powerful
computer.

You grow, you
buy a more powerful
computer.

Or, you
buy one
amazing
computer
and grow.



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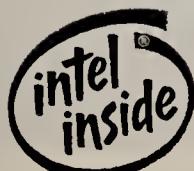
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*Copies of IBM Limited Warranty are available upon request. **In Canada, call 1 800 465-7999. †GB stands for billion bytes when referring to hard drive capacity. ‡Energy Star enable does not represent EPA endorsement of any product or service. The Intel Inside logo is a registered trademark and Pentium is a trademark of Intel Corporation. Windows is a trademark of Microsoft Corporation. PC Direct is a trademark of Ziff Davis Communications Company and is used by IBM under license. IBM, OS/2 and HelpCenter are registered trademarks and ValuePoint and SelectaBus are trademarks of the International Business Machines Corporation. ©1994 IBM Corp.

MULTIMEDIA BUZZWORDS

AUTHORING LANGUAGE

A high-level computer programming facility with English language commands specifically designed to implement multimedia applications.

COMPACT DISC INTERACTIVE

A multimedia standard proposed by Philips Corp. A specification to read data from a CD containing audio, image, graphics and computer data.

COMPRESSED AUDIO

A method of digitally encoding and decoding several seconds of voice-quality audio per single videodisc frame. This increases the storage capability to several hours of audio per videodisc.

COMPUTER EDIT SYSTEM

A video editing system controlled by a computer and interfaced to several playback and record machines. This type of system is capable of making precise frame-accurate edits.

DIGITAL AUDIO

A technique that stores audio as a series of numbers.

DIGITAL VIDEO INTERACTIVE

This technology compresses video images and, in its latest version, can produce animated scenes at 30 frames per second. The current compression ratio is 160-to-1.

INTERACTIVE VIDEO

The convergence of video and computer technology. A user has control over a coordinated video program and computer program through the user's actions, choices and decisions, which affect how the program unfolds.

MUSICAL INSTRUMENT

DIGITAL INTERFACE

Serial data transmission protocol for transporting musical information between compatible electronic musical devices.

SOUND BOARD

An add-in card with software that captures and plays back sound or music.

STORYBOARD

1. A visualization of the order of a piece, using representative frames from each shot or sequence to show a visual skeleton of the piece. 2. Documentation for video production that contains the audio script and a complete description of the visual content often in the form of pictures or sketches.

VIDEO CAPTURE CARD

An add-in card that digitizes analog video from a VCR, video camera or still image camera. Video can be digitized as a single frame or multiple frames to produce full motion video.

► THE 1994 WORLD CUP SOCCER TOURNAMENT TAPPED THE RESOURCES OF SYBASE, SUN MICROSYSTEMS, ELECTRONIC DATA SYSTEMS CORP. AND SPRINT CORP. ON A GLOBAL WAN TO TRACK 1,700 ATHLETES AND MANAGE THE LOGISTICS AND SECURITY OF THE GAMES. GAINMOMENTUM, SYBASE'S AUTHORING TOOL, INCLUDED VIDEO FEATURES THAT ALLOWED IMAGES OF PARTICIPANTS TO BE PRINTED ON BADGES AND STORED IN A DATABASE. ELECTRONIC KIOSKS

DELIVERED GAME INFORMATION AND STATISTICS, STANDINGS AND RESULTS AND PLAYER/TEAM PROFILES TO THE PRESS AND SPECTATORS.



Multimedia

CONTINUED FROM PAGE 67

Purchasing a high-powered multimedia system with all the bells and whistles can cost \$3,000 to \$4,000. This includes CD-ROM players, speakers, high-resolution color graphics monitors, sound boards, video capture cards and a 486-based PC with 16M bytes of RAM and a 350M-byte hard drive. Software such as authoring tools, image editing and graphics-creation programs can add an average of \$2,500 to the cost of the development system.

However, the biggest cost of producing any multimedia application is the hidden cost of development time. Costs vary from a low of \$10,000 for basic motion and animation to well into six figures for an advanced multimedia application with

complex branching. The longer the application runs, the more screen shots, audio and programming required. Interactive branches add to development time by increasing the complexity and logic of the programming.

The strain game

The combination of data, sound and video can strain a computer system, especially in a networked environment. Before you start development of a multimedia application, you must have the right hardware in place. To choose the best hardware strategy for your corporation, focus on the following three areas: the delivery system, the development system and the network.

• **The delivery system.** Determine which platform and hardware to deliver on before committing to any multimedia project. Knowing the delivery platform guides the approach to the multimedia

application and, combined with how much money you have in your budget, will narrow the choices of application development tools.

In some cases, you will have more control over the delivery system. For example, with a multimedia kiosk, which is a self-contained, free-standing unit used to house an interactive videodisc system, full-motion hardware-assisted video may be used. But a different system may be more appropriate for a marketing demonstration that is going out to thousands of unknown hardware systems and must fit on a floppy disk.

Further, determine whether the multimedia application will need to run cross-platform since this will also limit the authoring choices and file formats.

• **The development system.** Choose state-of-the-art hardware. Don't waste time or money trying to develop on old, slow equipment. Buy the fastest CPU (considering the delivery platform) and at least 16M bytes of RAM.

High-quality audio and video capture cards will record with better results. Look for adapter cards with digital signal processors (DSP). These are programmable devices designed for the specialized computations required to handle video and audio. DSP chips, which are starting to appear on motherboards and upgrade cards, can be reprogrammed as new algorithms are developed. The DSP chip is multitasking, so it can receive a fax and play music at the same time.

If you have to sacrifice hardware expenses, delivering video using a 286 or 386 computer is best done through videodiscs. Video is stored in analog format on the videodisc rather than digitally on the hard drive. Digital video requires a

AUTHORING TOOLS

CONTINUED FROM PAGE 67

features needed in your application. To further assist your selection, these tools use different approaches in order of difficulty: scripted, icon-based, stage-based, timeline and slide-based (see next page for tool definitions).

The following are the market leaders grouped into three categories based on ease of use and capabilities:

HIGH-END AUTHORING

Authorware Professional uses graphical icons in its programming-like scripting approach. *Computerworld's* Buyers' Scorecard ratings indicate that users were most satisfied with the tool's ability to build complex programs. Users were not as happy with its cost of development and programming language. The product has Windows and Macintosh cross-platform compatibility and costs \$4,995.

Macromedia, Inc., San Francisco, (800) 945-4061

GainMomentum is a script-based tool. Its object-oriented authoring allows users to create their own object classes, subclasses and libraries. *Computerworld's* Firing Line participants were pleased with this product's fluid database access but balked at the steep price (\$10,000 for a single-developer's license). In addition to Unix and Microsoft Corp.'s Windows NT, GainMomentum supports Sun Micro-

systems, Inc.'s SunOS, IBM's AIX, Hewlett-Packard Co.'s HP/UX and other major operating systems.

Sybase, Inc., Emeryville, Calif., (510) 922-3500

IconAuthor is an icon-based tool with scripting. It supports Microsoft's Object Linking and Embedding (OLE), Windows, Macintosh, Unix and OS/2 cross-platform compatibility. It also supports dBase files directly. A Smart Object Editor lets users create fully functional objects such as timers and buttons. The product costs \$4,995 and has a \$50 runtime fee.

AimTech Corp., Nashua, N.H., (800) 289-2884

Quest is an icon- and script-based tool, depending on which platform you use: DOS or Windows. It costs \$3,995.

Allen Communication, Inc., Salt Lake City, (800) 325-7850

TourGuide for Windows is a script-based tool aimed at experienced developers familiar with exotic scripting languages. It runs on a Windows platform and costs \$3,370.

American Training International, Inc., Los Angeles, (800) 955-5284

Multimedia Workbench for Supra Server is a script-based authoring tool that includes a multimedia server, Windows client authoring environment, network links and training. The product costs \$4,995.

Cincom Systems, Inc., Cincinnati, (800) 543-3010

MIDDLELEVEL AUTHORING

Director's timeline feature uses start/stop and action syn-

large amount of storage space and creates tremendous I/O demands on the CPU. One frame of uncompressed video is almost 1M byte. There are 30 frames of video per second. That means every second of uncompressed video is 30M bytes.

Digitally stored video is always compressed. How much and at what quality depends on the compression/decompression algorithms (CODEC) used. Joint Photographic Experts Group (JPEG) and Motion Pictures Expert Group (MPEG) are two CODECs emerging as standards.

With JPEG (the standard for still-picture data compression that is now being modified as motion JPEG for video compression) each frame is compressed and transmitted individually, limiting the potential data loss over networks. JPEG has a 40-to-1 compression ratio. Video may be compressed and decompressed using only software. On a standard PC,

the size of the video image is limited to about one-fourth of the screen at about 24 frame/sec. This is not full-motion but good enough in many cases.

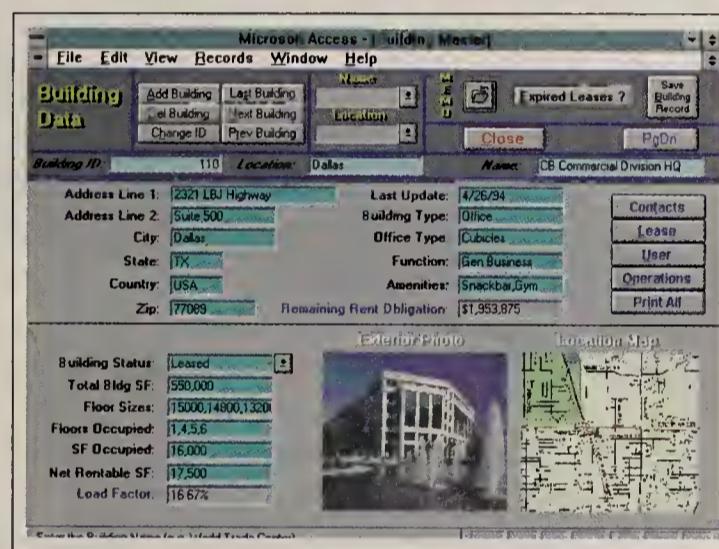
MPEG, which is a standard for digital video compression, first compresses a still image, then sends only the incremental changes. MPEG can achieve a 200-to-1 compression ratio, but it requires a hardware decoder for playback to achieve full-screen, full-motion video on the delivery system. With pricing at about \$495 per MPEG decoder card, it is considerably more expensive than software-only video.

Not every multimedia application needs video. Full-color graphic images and photographs displayed on the screen may deliver the information just as well at lower CPU and network costs.

This points out another concern of the delivery system: the graphics subsystem. The delivery system should display

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chronization capabilities. While users polled in the Buyers' Scorecard were most satisfied with the product's quality of applications developed, they gave its database access low marks. The tool offers Windows and Macintosh cross-platform compatibility and costs \$1,195. *Macromedia, Inc., San Francisco, (800) 945-4061*

Multimedia Toolbook's script-based approach offers interactive hot words and objects with properties in its application development. Buyers' Scorecard ratings reveal that users were impressed with the product's value for the dollar and cost of distributed runtimes. They were least impressed with the product's system requirements and ease of use. It runs on a Windows platform and costs \$395.

Asymetrix Corp., Bellevue, Wash., (800) 448-6543

Animation Works Interactive uses a stage-based approach, which means objects are given a path to follow and assigned a certain number of frames in which the action occurs. It offers Windows and Macintosh cross-platform compatibility and costs \$495.

Gold Disk, Inc., Mississauga, Ontario, (800) 465-3375

Q-Media for Windows is a timeline-based tool. It is interactive, easy to use and costs \$199.

Q-Media Software Corp., Vancouver, British Columbia, (604) 879-1190

Action is a timeline-based tool that has the ability to im-

Multilayered multimedia

Here is a profile of a typical system

User interface	Authoring tools	Peripheral hardware	Operating systems	Chips
MOUSE OR TOUCH SCREEN	ENTRY-LEVEL	CD-ROM DRIVES	DOS	486
ANIMATION	MIDLEVEL	AUDIO CARDS	WINDOWS	PENTIUM
SOUND	HIGH-END	VIDEO CARDS	OS/2	68000
VIDEO		NETWORK CARDS	MACINTOSH	



256 colors at 640- by 480-pixel resolution. Anything less will not deliver useful images.

The delivery system will also need an audio card to enable sound in most cases. Some authoring programs enable sound from the PC speaker chip, but the quality is poor. Audio files are stored in one of two digitized formats: Wave, which is a Windows audio format and Musical Instrument Digital Interface (MIDI). Wave audio files are large, while a MIDI file is one-tenth the size of the same Wave file.

• **Delivering multimedia over a network.** File sizes become critical when delivering multimedia over a network. Many multimedia applications share information interactively, not just as an occasional download from a server database. Few existing Ethernet LANs, Token

Ring LANs and wide-area network transport systems are adequate for distributed multimedia even when they include high-speed links and data compression facilities.

A large bandwidth of at least 100M bit/sec. and Asynchronous Transfer Mode and high-speed Fiber Distributed Data Interface is important. Lacking these, many corporations turn to delivering multimedia applications on CD-ROM and videodiscs. This eliminates network bottlenecks but adds hardware costs for individual CD-ROM drives and video adapter cards.

Wood is president of Egeland Wood & Zuber, Inc., a corporate communications company in Atlanta that specializes in bringing corporations into the future. Her CompuServe address is 70732,3034.

port actions created in Macromedia's Director. It runs on a Windows and Macintosh platform and costs \$399. *Macromedia, Inc., San Francisco, (800) 945-4061*

ENTRY-LEVEL AUTHORING

Storyboard Live uses a stage-based approach and offers audio and video playback without requiring special hardware. It runs on a DOS platform and costs \$149.

IBM, Armonk, N.Y., (800) 426-3333

PowerPoint uses a slide-based approach and incorporates audio, video and branching through OLE. It runs on a Windows and Macintosh cross-platform and costs \$495.

Microsoft Corp., Redmond, Wash., (800) 426-9400

Compel uses a slide-based approach. It runs on a Windows and Macintosh cross-platform and costs \$295. *Asymetrix Corp., Bellevue, Wash., (800) 448-6543*

Astound uses a slide-based approach that is object-oriented with timelines for objects and slides. It runs on a Windows and Macintosh cross-platform and costs \$129.

Gold Disk, Inc., Mississauga, Ontario, (800) 465-3375

Super Show and Tell is slide-based and has a media objects editor that has five tools on one screen for easy control. It runs on Windows and costs \$149.

Ask Me Multimedia Center, Inc., Minneapolis, (612) 531-0603

TOOL DEFINITIONS

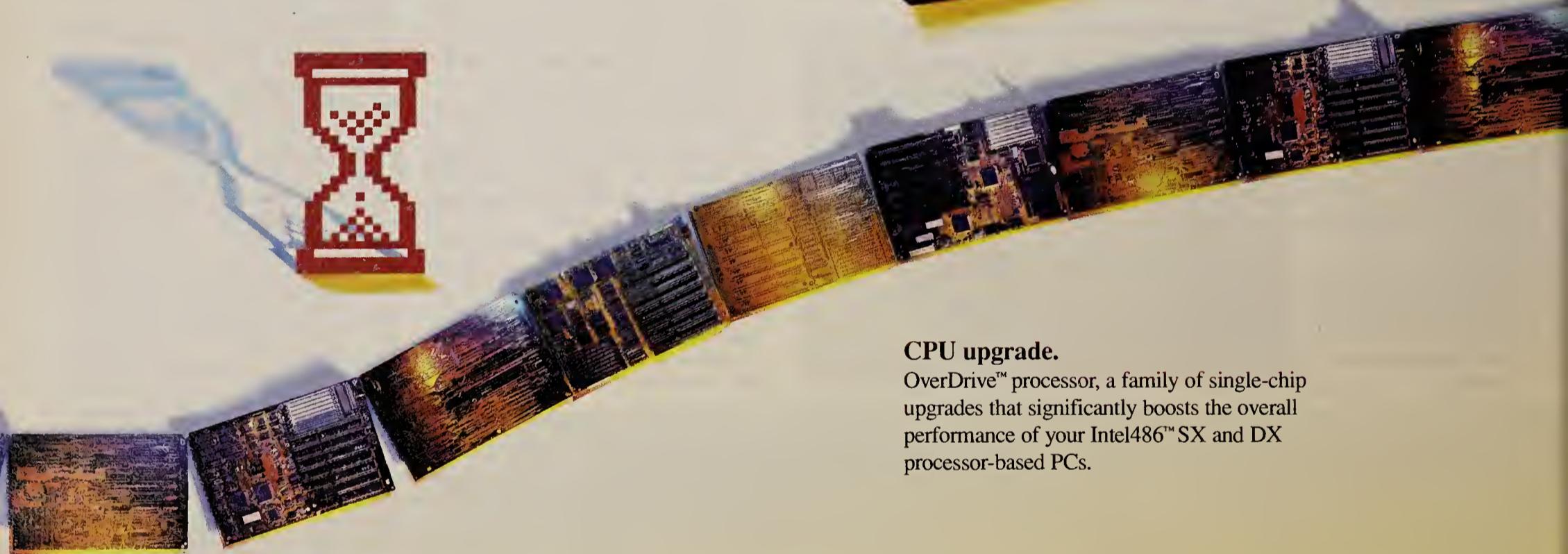
Scripted multimedia authoring tools require programming to create an application. The benefit of script-based tools is that they are usually faster and require less overhead to run. You also have precise control of all actions taking place in the multimedia application.

Icon-based tools create multimedia applications by connecting groups of graphical icons together that represent actions the computer will take. The icons have been programmed to perform specific tasks, or you can create more icons and program them for your application.

A stage-based multimedia authoring tool starts with a blank screen with objects. Each object is given a path to follow and assigned a certain number of frames in which the action occurs.

A timeline-based program also starts with a blank screen and adds objects onto the screen. The action of each object is controlled by a timeline with precise start/stop and action synchronization capabilities.

Slide-based authoring programs do not require programming to create an application. Changes take place as each slide appears and transitions into the next slide.



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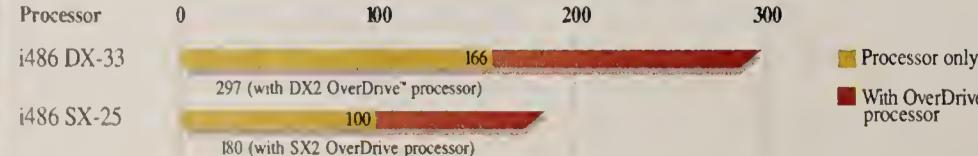
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Buyers' Scorecard: Authoring tools high in quality and complexity



Satisfaction rankings

High-end authoring tools



AIMTECH'S ICONAUTHOR FOR WINDOWS



MACROMEDIA'S AUTHORWARE PROFESSIONAL FOR WINDOWS

Midlevel authoring tools



MACROMEDIA'S DIRECTOR



ASYMETRIX'S MULTIMEDIA TOOLBOOK

USERS RATED PRODUCTS IN 17 CATEGORIES. OVERALL RANKINGS ARE BASED ON THE AVERAGE RATING WEIGHTED BY IMPORTANCE OF EACH CATEGORY

Market-leading authoring tools

RATINGS ARE BASED ON A 1-TO-10 SCALE, WHERE 10 IS BEST

RESPONSE BASE: 50 OR MORE USERS PER PRODUCT

Ratings categories	High end		Midlevel	
	AIMTECH'S ICONAUTHOR FOR WINDOWS	MACROMEDIA'S AUTHORWARE PROFESSIONAL	MACROMEDIA'S DIRECTOR	ASYMETRIX'S MULTIMEDIA TOOLBOOK
APPLICATIONS	7.8	8.1	8.1	7.3
EASE OF USE	7.0	7.1	7.2	6.9
SUPPORT	8.0	6.2	7.3	7.3
COST	7.2	7.1	7.4	7.4
COMPATIBILITY	6.9	6.9	7.1	6.8
PROGRAMMING	7.3	7.4	7.3	7.2
FUNCTIONALITY	7.0	7.0	7.3	6.9
SYSTEM REQUIREMENTS	7.2	7.2	7.3	6.7

By Michael Sullivan-Trainor

More than 200 users of multimedia authoring tools from high-end and midlevel vendors said they were most satisfied with the quality of applications they were able to build. That's saying a lot given the complexity and learning curve required to produce and integrate graphics, text, video and interactive features in a single application.

Macromedia, Inc., a market leader in multiple tool categories, received the highest ratings (8.1 on a 10-point scale) for application quality for both Director and Authorware.

High-end rival, AimTech Corp.'s IconAuthor, scored just below Authorware Professional in application quality. Although IconAuthor users were less satisfied than Authorware users in seven of the 16 categories, the product received higher ratings in technical support, value for the dollar and system requirements.

Bang for the buck

In the more price-sensitive midlevel area, Asymetrix Corp.'s Multimedia Toolbook received its highest satisfaction rating in value for the dollar. Value was the second most important category to users of both levels. Macromedia's Director received comparable ratings in value and ease of use.

Overall, users were less satisfied with their products' ability to provide database access and interoperability. All received a 6 on a 10-point scale for these categories.

All of the users, who were running a variety of versions of the products, overwhelmingly said they would buy the product again. Director was the high scorer garnering continued allegiance from 90% of the 52 users surveyed.

Users were primarily using the products to build computer-based training, internal presentation, kiosk or informational applications.

The survey was conducted in June and July by the *Computerworld* Database Division in Framingham, Mass., and First Market Research in Austin, Texas. Approximately 2,000 users of multimedia products were contacted. Users were identified for Apple Computer, Inc.'s Media Kit and Allen Communication, Inc.'s Quest in addition to the four products profiled. Insufficient responses were collected for a reportable sample of the Media Kit and Quest results.

A minimum of 50 users per product was required. The survey was based on 16 question areas determined in consultation with experts and research firms knowledgeable about authoring tools.

For a methodology or further information, contact Michael Sullivan-Trainor, senior editor, CW Guide, *Computerworld*, (800) 343-6474, ext. 229 or on the Internet at mstrainor@ew.com.

The vendors profiled can be reached as follows: AimTech Corp., Nashua, N.H., (800) 289-2884; Asymetrix Corp., Bellevue, Wash., (800) 448-6543; and Macromedia, Inc., San Francisco, (800) 945-4061.

Sullivan-Trainor is *Computerworld*'s senior editor, CW Guide.

What's important in a multimedia authoring tool?

RANKING IS IN ORDER OF IMPORTANCE TO 200 USERS SURVEYED

1	APPLICATIONS	• Quality of applications developed
2	EASE OF USE	• Ease of use • Documentation
3	SUPPORT	• Responsiveness of vendor's service • Quality of technical support
4	COST	• Value for the dollar • Cost of distributed runtimes • Cost of development kit
5	COMPATIBILITY	• File format support • Interoperability with other applications
6	PROGRAMMING	• Ability to build complex interactive programs • Programmability
7	FUNCTIONALITY	• Handling video elements • Handling audio elements • Database access
8	SYSTEM REQUIREMENTS	• Drivers/support for peripherals • Development system requirements

GAINMOMENTUM: Powerful interactivity, slow video/data access

GainMomentum



Computerworld's Firing Line is an evaluation based on interviews with major users at corporate and educational installations. The product under evaluation is being used in live application environments.

- Sybase, Inc.'s GainMomentum 3.0 high-end multimedia authoring tool provides powerful features for quickly creating interactive applications.
- But users said GainMomentum's ability to quickly incorporate video is lacking. They also found the \$10,000 price a bit steep.

Sybase shipped Version 3.0 of its GainMomentum multimedia authoring tool in June. Based on a product acquired through its merger with Gain Technology last year, GainMomentum 3.0 features an improved user interface, new sequencing and object browser tools and support for Microsoft Corp.'s Windows NT. In addition, GainMomentum supports Sun Microsystems, Inc.'s SunOS, IBM's AIX and Hewlett-Packard Co.'s HP/UX.

QUALITY OF APPLICATIONS

Overall, the evaluators were satisfied with the speed and quality of the applications produced.

Laboratory: "In spite of the performance hit we take because sometimes we're having to go out and query the database or the server more times than we should have to, I was really pleased to see the power of the applications we were able to put together within six weeks."

VALUE/COST

Initially marketed with a \$20,000 price tag, GainMomentum is now more affordable at \$10,000, but the evaluators said that is still a large investment for a development tool.

BUILDING COMPLEX PROGRAMS

The evaluators praised GainMomentum's ability to make complicated interactive functions very easy to accomplish.

Telecommunications: "Before we had [GainMomentum] in-house, we had specified a cer-

tain level of interactivity. Once we got it in and really saw the flexibility of it, we were able to increase the interactivity of the applications."

HANDLING OF VIDEO AND AUDIO

The product's audio capabilities barely met expectations, particularly in the Windows NT implementation. The video worked well when loaded, but preparing it for the GainMomentum environment took too long.

Laboratory: "The audio sort of works as expected. I've done a limited amount with the video, but I've found it very difficult. Bringing videos that are anything more than a few small frames into the environment is very painful."

INTEROPERABILITY

GainMomentum provides interoperability, but on a limited scale, the evaluators concluded. The more complex the information in other environments, the more difficult it is to use.

Government: "The ability of the development environment to access the outside world, either through the direct library calls, through sockets or using a system call to pass a Window ID off to another program, is very powerful. But again, it's hard to pass some of the data around, back and forth, because you can't pass structures of information. You have to pass individual parameters."

PROGRAMMING LANGUAGE

The evaluators said the new features of the Gain Extension Language (GEL), such as user-

Sybase's GainMomentum

Sybase, Inc., Emeryville, Calif. (510) 922-3500

RATINGS ARE BASED ON USER EXPECTATIONS ON A 1-TO-5 SCALE, WHERE 1 IS BELOW EXPECTATIONS AND 5 IS ABOVE EXPECTATIONS. RATINGS ARE PRESENTED IN ORDER OF IMPORTANCE TO USERS.

4	OVERALL RATING
3	QUALITY OF APPLICATIONS
3	VALUE FOR THE DOLLAR
4	SUPPORT/DOCUMENTATION
4	SERVICE
4	BUILDING COMPLEX PROGRAMS
3	COST
3	HANDLING OF VIDEO/AUDIO
3	INTEROPERABILITY
3	PERIPHERALS/DRIVERS
4	PROGRAMMING LANGUAGE
4	DATABASE ACCESS

defined classes, greatly increase the capability of the programming language. But there are occasions when C libraries have to be accessed.

Government: "It met our expectations. But we often find ourselves going outside GEL to C and linking it to C libraries to do a lot of the heavy calculating and algorithmic work that we need."

Laboratory: "In our application, we make tremendous use of dynamic linking, and it's not something that we can create within GEL because we're using the [Object Management Group's] Common Object Request Broker Architecture."

DATABASE ACCESS

While the evaluators liked improvements to data access, which made better use of Sybase features, they said that support for Oracle Corp.'s database has become a lower priority since Sybase acquired Gain Technology.

Telecommunications: "Essentially, database access is lower than our expectation because originally in our design we were planning on accessing Oracle. There were supposed to be Oracle hooks in GainMomentum. However, when Sybase came in, they really focused on the Sybase hooks, and Oracle was put on the back burner."

Sybase responds

Sybase responded to the issues raised in this evaluation:

Video performance

The original strategy with respect to video performance was to provide a software-based solution. As video boards have become more prevalent, we are now moving to support those directly. By supporting video boards we are able to increase video performance dramatically.

Oracle support

Since Sybase's acquisition of GainMomentum, the company has continued its commitment to support other database environments. GainMomentum 3.0 currently supports Oracle Version 6 and will support Oracle by year's end.

Cost

Sybase is committed to providing GainMomentum at a competitive price.

By Senior Editor Michael Sullivan-Trainor

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in Computerworld!

"Oops - I forgot to log off again."
One-size fits all
50/50 blend Cotton/
Polyester. Made in
U.S.A.

"Don't panic! Just push
the escape key."
Ceramic 10 oz Mug.

"What's the digital
bathroom scale
doing in my laptop
case?"
32. oz. Sip-it Bottle
with insulator.

"Bud and Elliot
Grundt develop
the first Main-
frame Mouse."
Mousepad,
8 1/2" x 7 3/4".

"What's the digital
bathroom scale doing
in my laptop case?"
Roomy 100% natural
cotton canvas with
webbed straps, 14" x 9".

"Don't panic! Just
push the escape key."
Durable and roomy,
16" x 9" black cotton
canvas - includes
sturdy webbed straps &
zipper. Made in U.S.A.

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If I Fail, YOU Fail

The word "teamwork" doesn't mean much to business managers. It's about time they stop pointing the finger at IS and share in accountability for technology projects.

SOME YEARS BACK, I worked for the aerospace division of a large Fortune 100 company. The parent company prided itself on accomplishing tasks quickly and with a high degree of teamwork. Unfortunately, neither of these attributes were associated with the information technology department.

According to the description by one of the non-information systems managers who also worked there at the time, systems were never within budget, never on schedule and never delivered what was promised.



RANDY LYRUS

In my mind, these failings were due to a lack of true teamwork. No, not within the IS department; what was lacking was teamwork between the IS department and the operating departments it served.

The problem stemmed from the fact that upper management never truly defined what teamwork actually meant. The implication was that teamwork was everyone working together toward the same goal. But in actuality, not everyone on the team accepted equal responsibility and accountability for the results of their efforts. Unfortunately, only the IS

group was held accountable for delivery of the system.

It seems to me that there's something basically wrong with this premise. Let's say, for example, that you have a crew of people composed equally of IS and operating department personnel on a sailing ship. They're caught in a storm near a rocky coast, and the wind and seas are about to force them onto the rocks.

Now in this case, it's important that everyone work together as a team. Failure to do so would result in disaster.

Teamwork, page 78

BY LARRY RUNGE

Teamwork

CONTINUED FROM PAGE 77

It wouldn't matter if you worked in the rigging in the howling wind or just stood aside and gave orders. If the ship hits the rocks, you're all going down together. This is true teamwork at its finest.

However, I can assure you that the non-IS half of the team would not be as com-

mitted to saving the ship if it knew a helicopter was going to pluck it from the deck before the ship sank, leaving only the IS folks to their briny fate.

I have seen several systems managers lose their jobs because of project failures, but I have seen only one non-IS manager lose his job for the same reason.

What's wrong with this picture?

Let's face it, systems development requires teamwork between IS and the operating departments it serves. It's not

enough to set budgets and schedules and then hold IS responsible for them.

Here's another incident from a few years ago in which I had firsthand experience. I've also seen this situation happen at various companies over the years.

This particular company approved a project intended to reduce head count in one of its departments by 30%. The plan was to go from a batch processing system, which required manual data entry, report printing and keypunching, to a

system that was completely on-line. The firm also hoped to reduce cycle time.

While there were some travails, IS delivered the system. The system did reduce cycle time and increased efficiency.

Yet the operating manager who was charged with reducing head count claimed he couldn't do so. He blamed the system, saying it failed to deliver promised functionality.

While the system did not supply every bell and whistle, the truth was the manager was afraid business was going to increase, and he would need all of his people. He wanted to keep his staff instead of reducing it and then having to hire more people later. He thought this made him look good.

IS was held completely responsible for the perceived debacle, and the group lost much credibility among the business managers. Another project under way came under intense scrutiny, as did budgets and schedules for future projects.

No one ever held the operating manager accountable for failure to cut the head count, even though it was a goal that was agreed on as a team.

Senseless system

If this appears to be a Faustian bargain, that's because it is. From a business standpoint, not only does this approach not make sense, but it is also unprofitable and even borders on stupidity. This is certainly not teamwork; in fact, you could even call it antiteamwork.

I propose a change. When agreeing on the budget, schedule and technical deliveries for a project, the IS manager and his non-IS counterpart must agree on the efficiencies the operating department will gain. That is, if the goal of the project is to reduce operating costs by 20%, then both managers must be accountable.

What does this mean in a practical sense? It means that once the project is complete, the operating manager must deliver on his financial commitments. He cannot be allowed to use IS as a scapegoat if he can't meet those commitments.

Senior managers should not view IS and operating managers separately, but as two parts of a whole. Thus, in my proposal, if a given project doesn't deliver on all the commitments the two managers make, then both are held equally accountable. If the IS manager loses his job, the non-IS manager loses his job. No more us and them. As members of a team, each are held responsible for all results.

The point is that we must accept business challenges as a team and work together as a team. In the end, we will either succeed, or in the words of Winston Churchill, "we'll all go down together."

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Planned Editorial Features:

(subject to revision)

- Companies where computer career students want to work. And their top choices for: Information Systems, Engineering, Sales & Marketing, Technical Support, Research & Development.
- Information Systems salaries from Computerworld's annual survey with the Association for Systems Management
- And much more!

Computer Careers

100 tips for terrific GUIs

by David A. Kelly

Create windows. You don't have to cram all the fields onto one window as you would with a 3270 screen. Put pick lists, messages and field-dependent information on subwindows. "It's a big leap for character-oriented programmers to pull information off one window and put in another, but when the information isn't used much, it works well," says Jo-Ann Driscoll, an education specialist at Powersoft Corp. in Concord, Mass.

Make screens clean. "Keep shapes and objects to a minimum and the number of colors low," says Steve Douty, general manager at ETI International, Inc. in Sunnyvale, Calif. Screen objects should be balanced with white space.

Be consistent. Use the same font and size for related buttons. Keep the actions the same. "If standards are not followed within an application, it will be very difficult for users to become accustomed to the program," Douty says.

Find out what users will use. You're designing a screen to help someone get a job done, not to try out all the objects. "I've developed some really clever screens with nice displays and then had the users say they don't need all the extra stuff," says Fred Schuff, a former Cobol programmer now working as a contract GUI programmer.

Start with a white board. Instead of spending time prototyping in the GUI environment, hand-draw two or three versions of the most important screens. It's quicker than coding, and you won't get attached to designs that aren't optimal. "Users really enjoy using white board screens to circle things they like or don't like," says Christine Comaford, presi-

dent of Corporate Computing, Inc. and developer of a GUI design class in Bannockburn, Ill.

Be considerate. Limit the number of fonts and font sizes to three or four per window. Avoid the use of italics and serif fonts because they tend to break up on the screen. Use color sparingly. "We recommend neutral colors for the background," Driscoll says. "Avoid the combinations of red on green or blue on yellow because your eyes will go crazy."

Keep the keyboard involved. Allow for keyboard control of the screen as well as mouse control. "Too often the mouse is used to the exclusion of the keyboard, and then you're stuck if you sit down at a PC with a broken mouse," says Edwin DiGiambattista, project manager at Chubb Advanced Training, a division of the Chubb Institute in Parsippany, N.J.

Pick a naming standard. Design a naming convention for your objects, vari-

ables and routines and stick with it. GUI systems tend to have numerous modules and objects, rather than just one large program, that must be modified for a name change. "I've become much more rigorous in enforcing my naming conventions," Schuff says. "For every half hour you can save by cutting corners, it will cost you an hour later on."

Don't be an inventor. Examine commercial GUI products and use them. "You can learn a lot by interviewing the users on what they like or don't like about the Windows applications," Douty says.

Keep it short. You don't have to gather user requirements all at once. "We recommend that developers do two four-hour sessions with users to collect requirements. That's enough information to start designing," Comaford says.

Kelly is a free-lance business and technology writer in West Newton, Mass. He can be reached via CompuServe at 71011,2262.

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Life hasn't been the same for Wachovia Bank of North Carolina's Bryan Pollard since he added LAN administration to his duties.

As a PC specialist, Pollard had become accustomed to starting work at 8:00 a.m., sorting through his mail and programming a little before the first user call ever came in. Since implementing the LAN more than a year ago, however, Pollard's mornings are no longer his own.

"I thought my job would be easier when we moved to a LAN," says Pollard, a project administrator at the Winston-Salem bank. "But it's not."

To make the transition from supporting stand-alone PCs to a networked environment in the bank's audit department, Pollard relied heavily on his own initiative. He taught himself Windows and attended vendor-sponsored training to learn to add users to the network, update user information, reset passwords, disable connections and shut down the server. "In the PC world, I could solve 95% of the problems in minutes," Pollard says. "With LANs, a whole new realm of things can happen."

A difficult hurdle for Pollard was learning how memory affects the network's reliability. He learned the terminology, such as conventional, high, extended and expanded memory, and experiment-

Not in Kansas Anymore

By Julie Hart

ed to see how Windows used the different memory types in order to prevent system lockups.

In addition, Pollard figured out how to store each user's Windows setup files separately on the server. "We worried if the users didn't like the way their screens looked, they wouldn't use Windows," he says. "We keep their setup files separate, so they can make changes to their desktop."

Pollard, 30, began his career as a mainframe printer operator in the Illinois aerospace industry. He learned to program and was hired at the bank three years ago, where he spent much of his time tinkering with PCs. Now, more than three quarters of his day is spent keeping the LAN and attached PCs up and running.

"You must prepare yourself to be service-oriented," Pollard says. "If you

Just how different is it?

Bryan Pollard's transition from PC specialist to LAN administrator was a big adjustment in many respects

PC specialist

Average daily stress level: 1.5 (scale of 1 to 5)

Average user contacts per day: 3 to 4

Average response time: 5 to 30 minutes

Average number of days he skips lunch: 0

LAN administrator

Average daily stress level: 3.5 (scale of 1 to 5)

Average user contacts per day: 12 or more

Average response time: 55 minutes to 4 hours

Average number of days he skips lunch: 2

thought you were [service-oriented] when you only had PCs, you'd better wake up." For example, Pollard found that users are far more demanding when they are on the LAN. "You're giving them great tools to work with, and they want more, and they want it now."

A big concern, he says, is that problem resolution time has risen from a maximum of 30 minutes to sometimes an hour or more because of complex LAN issues. If a user can't print, for example, Pollard must first find out what printer to look at. "When users log on [to the LAN], they're logging into three servers without knowing it," Pollard says. He must then determine if the connection is down between the PC and the printer, if it's a configuration problem with Windows or Novell, Inc.'s NetWare or if it's something else.

And there are plenty of hurdles. One of the biggest is setting priorities. "I always ask myself, 'How long will it take to solve this problem?' If it takes 30 minutes or more, I'll ask the user how important it is. Often they can wait," Pollard says.

Another hurdle is keeping up with technology. Pollard often spends two to four hours a week reading technical publications. "I do my reading on the job," he says. "A lot of people I know won't do this and end up not reading at all."

Despite the fact that Pollard now misses lunch a couple of times a week and doesn't always get to the gym, he wouldn't give up his job. "The challenges keep me going, and I like the feeling I get when I solve [a user's] problem. It's a great job."

Hart is a free-lance writer in Sunnyvale, Calif.

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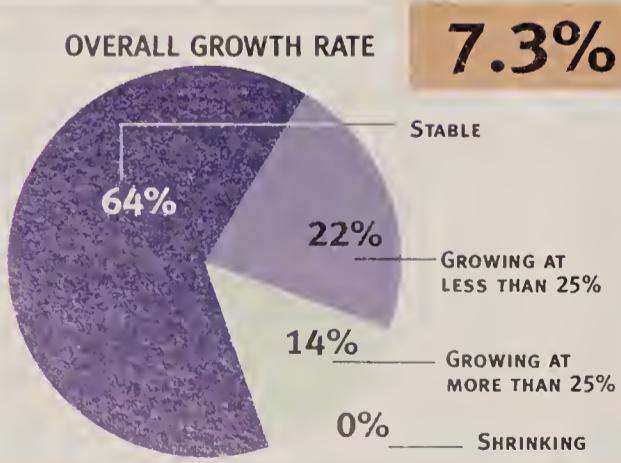


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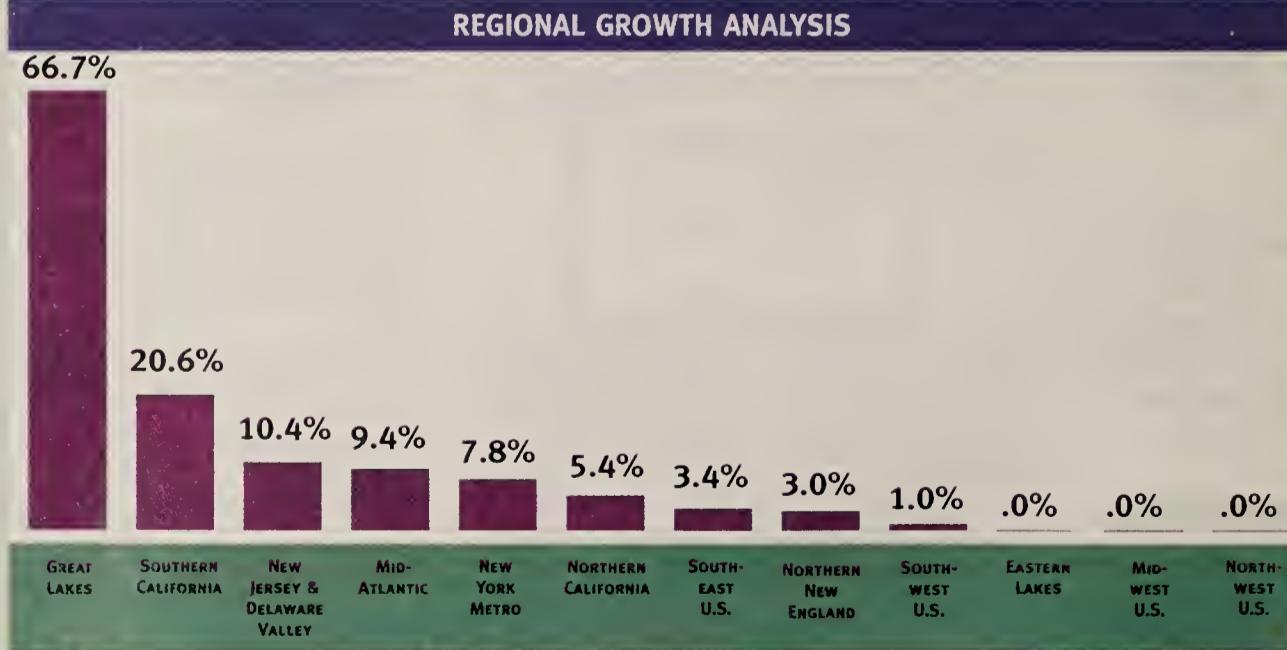
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great EXPECTATIONS

Multimedia promises the world, but some users may find it hard to attain the glitz they're hoping for

By Stephanie Wilkinson

MULTIMEDIA, the fluid integration of text, graphics, animation, sound and video, is swiftly grabbing the corporate imagination. As a result, expectations are running high — too high, some experts say.

No longer limited to animated games, multimedia's use ranges from enhancing presentations and training to developing point-of-sale kiosks and retail CD-ROM titles.

Thanks to sophisticated authoring tools, multimedia capabilities are now within reach of those with limited programming know-how, but high expectations often result in frustration. "The vendors tend to claim that anyone can use their products," says Don Caskey, vice president of development at Synesis Corp., a training development company in Roswell, Ga. "These days people want to imitate the kind of multimedia seen on TV. They don't realize that it's not that easy."

Let the buyer beware

While authoring tools are getting better all the time, Caskey says, buyers should know what they're getting into. "People

underestimate the time it takes to do multimedia, both to learn the product and to produce the end result," he says. "They may also be surprised by the tinges of amateurism that appear in the final product."

Veteran tool users advise newcomers to avoid rushing through the tool selection process. For example, Jim Rounsville, a senior training specialist at Beckmann Instruments, Inc. in Brea, Calif., took two years to choose a tool he was comfortable with. "I took classes and read industry literature. I had to find a product that would be accessible to me — one that wouldn't make me write a lot of code," Rounsville says.

Moreover, users shouldn't expect to quickly churn out great-looking materials all at once. "From inception to completion, a one-hour multimedia training program takes about 100 hours to do," says John Patten, LAN manager at a major Midwest auto manufacturer.

Individual differences

Each tool has its own metaphor, or way of allowing users to organize the various media forms that go into a multimedia program. Some systems use a time line, others use a storyboard or film strip metaphor, and still others use icons or flowcharts. The variety of metaphors available make careful shopping crucial. "If you jump into a metaphor that doesn't accommodate the way you think or work, you could suffer," says Gary Schultz, principal analyst at Multimedia Research Group in Sunnyvale, Calif.

Of course, the more glitz you want, the better tool you'll need (see CW Guide,

page 67). At the low end, the tools create multimedia presentations that proceed in a linear fashion without much backtracking or skipping ahead. High-end tools allow authors to build interactivity into the final product. Touchscreen support, robust networking links and integrated database functions are key.

Vendor training

Users must not underestimate the learning curve. "It's substantial," says Dan Spirn, author of CD-ROM games for children at GTE Interactive Media in Carlsbad, Calif. "You have to play around with it a lot to get good at it."

Spirn and other users strongly recommend on-site training, which some vendors offer to get going on their products. On-line tutorials and traditional manuals also help, although hands-on training is best. "I'm just not sure how well you could learn an authoring system from the books," says Kristin Stone, systems trainer at Mass Mutual Life Insurance in Springfield, Mass.

For optimum results, you may want to consider building a team of multimedia specialists. "You can do it all on your own, but you might have to live with a pretty amateurish piece," says Mark

multimedia facts

Where's it being used?

	1993	1995*
EDUCATION AND TRAINING	46%	86%
PRESENTATION PACKAGES	42%	85%
MULTIMEDIA PUBLICATIONS/REFERENCE MATERIALS	35%	76%
MULTIMEDIA DATABASES	26%	74%

*Estimated

What's being spent?

The average multimedia budget for the next 12 months is \$200,000. Here's how it will be allocated:

APPLICATIONS	34%
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NETWORK INFRASTRUCTURE	10%
SERVICE AND SUPPORT	10%
ADDITIONAL PERSONNEL	5%

Base: 305 corporate users

Source: Business Research Group, Newton, Mass.

Reed, network administrator at Hoffmann-Laroche, a pharmaceutical manufacturer in Nutley, N.J.

But whatever the approach, temper expectations to meet the project, Schultz advises, and think carefully about the desired product, whether it's a simple audio-and-text slide show or a full-blown interactive program with digital sound and video. "Find out what suits you," Schultz says.

Wilkinson is a free-lance writer in Charlottesville, Va.

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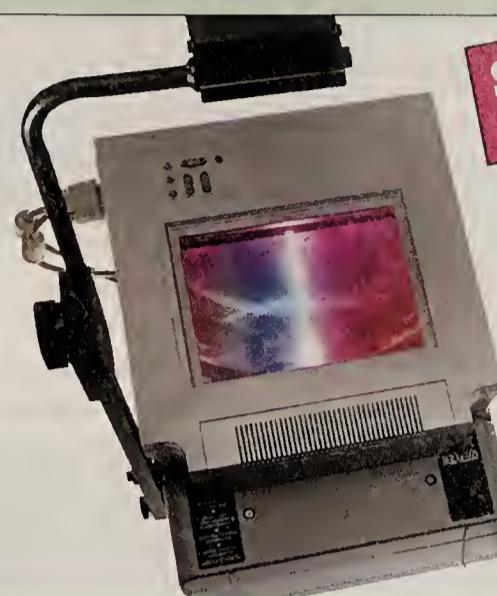
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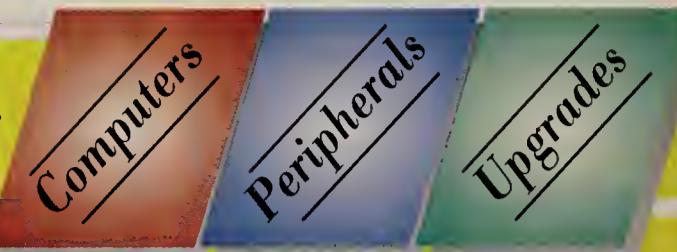
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Gainers

Losers

Percent

CRAY COMPUTER	53.3	MATHSOFT (L)	-44.4
ROSS SYSTEMS	36.0	RACOTEK INC. (L)	-28.9
STRATUS COMPUTER INC.	19.6	CENTIGRAM COMMUNICATIONS	-24.3
XILINX	15.6	EASEL CORP.	-20.0
KNOWLEDGEWARE INC.	14.7	POWERSOFT	-15.9
QUARTERDECK OFFICE SYS.	13.2	MICROGRAFX INC.	-15.9
STATE OF THE ART	12.5	BROOKTROUT TECHNOLOGY	-14.3
NETRIX CORP.	12.5	SEQUOIA SYSTEMS INC.	-14.0

Dollar

STRATUS COMPUTER INC.	5.50	POWERSOFT	-8.25
XILINX	5.13	CENTIGRAM COMMUNICATIONS	-3.94
BMC SOFTWARE INC.	4.00	COMPUTER SCIENCES	-2.25
MOTOROLA INC.	3.25	NETMANAGE INC.	-2.25
STRATACOM INC. (H)	3.00	BROOKTROUT TECHNOLOGY	-1.75
CIRRUS LOGIC	2.88	ZILOG INC.	-1.75
CHIPCOM CORP.	2.75	COMPRESSION LABS INC.	-1.63
NEWBRIDGE NETWORKS CORP.	2.63	MATHSOFT (L)	-1.50

Industry Almanac

Survival of the fittest

While July rumors about a possible relationship between **Oracle Corp. (ORCL)** and **Gupta Corp. (GPTA)** had some Wall Street analysts crying merger before investors could blink, most said it is too soon to tell whether anything will come of early talks between the two companies.

Yet several analysts agreed that Gupta's shaky standing cannot be blamed on the company's internal weaknesses alone. Adding to its woes is an overcrowded application development tools market that is becoming increasingly competitive, if not downright cutthroat.

"The market is extremely large and fragmented around different segments of users all looking for new development tools to fit distributed, open and client/server systems," said Christopher Mortensen, an analyst at Alex. Brown & Sons in New York. As a result, he said, companies such as **KnowledgeWare, Inc.** and **Texas Instruments, Inc.** — longtime players in the application development tools market for mainframes and large systems — are scrambling to grab market share for low-end, midlevel and high-end tools.

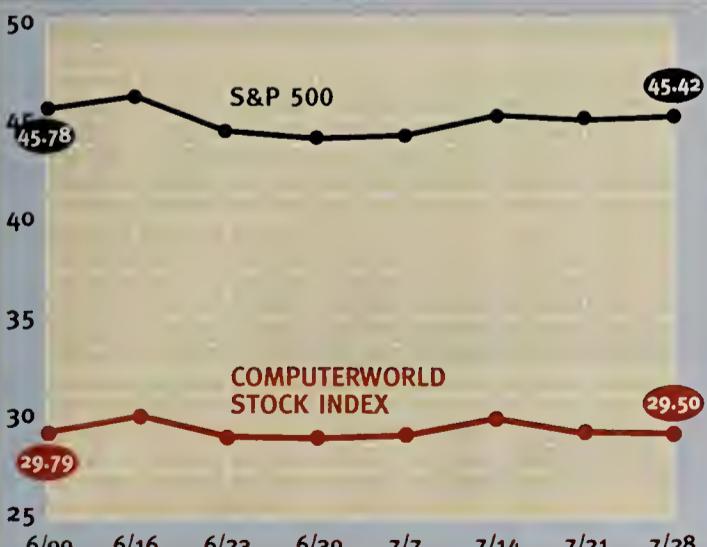
"As far as we're concerned, Powersoft is the leader in this segment and a strong Buy," Mortensen said. "Oracle is also an extremely strong Buy."

Bill Shattuck, an analyst at Montgomery Securities in San Francisco, said a merger of Oracle and Gupta would in theory be a "good strategic fit."

"We're rating Gupta as a Hold because it's a stand-alone company that had a pretty disappointing quarter, not because of all the flak about Oracle," Shattuck said.

—Erin Callaway

STOCK TRADING INDEX



EXCH 52-WEEK RANGE

July 29 Wk Net Wk Pct			
	3 PM Change	Wk Change	3 PM Change
Communications and Network Services			
OTC	63.75	19.63	3 COM CORP.
NYS	45.56	36.25	AMERITECH CORP.
NYS	63.88	49.50	AT&T
OTC	26.50	12.75	BANYAN SYSTEMS INC.
NYS	69.13	49.00	BELL ATLANTIC CORP.
NYS	63.88	53.00	BELLSOUTH CORP.
NYS	21.50	8.38	BOLT, BERANEK & NEWMAN
OTC	15.75	9.00	BROOKTROUT TECHNOLOGY
NYS	132.50	82.63	CABLETRON SYSTEMS
OTC	43.00	12.25	CENTIGRAM COMMUNICATIONS
OTC	60.25	31.50	CHIPCOM CORP.
OTC	40.75	18.75	CISCO SYSTEMS INC.
OTC	18.38	9.25	COMPRESSION LABS INC.
OTC	12.38	5.13	COMPUTER NETWORK TECH.
OTC	33.75	8.50	CROSSCOMM
OTC	3.13	1.50	DATA SWITCH CORP.
OTC	36.56	17.88	DSC COMMUNICATIONS
NYS	17.63	8.25	GENERAL DATACOMM IND.
NYS	39.88	29.50	GTE CORP.
NYS	95.97	78.63	ITT CORP.
OTC	29.63	21.38	MCI COMMUNICATIONS CORP.
OTC	7.75	1.50	MICROCOM INC.
OTC	23.50	11.50	NETMANAGE INC.
OTC	7.25	3.75	NETRIX CORP.
OTC	8.75	3.50	NETWORK COMPUTING DEVICES
OTC	23.38	10.63	NETWORK GENERAL
OTC	9.63	6.38	NETWORK SYSTEMS CORP.
OTC	73.88	28.38	NEWBRIIDGE NETWORKS CORP.
NYS	33.75	23.38	NORTHERN TELECOM LTD.
OTC	28.00	16.38	NOVELL INC.
NYS	48.88	33.25	NYNEX CORP.
OTC	30.00	15.50	OCTEL COMMUNICATIONS CORP.
OTC	18.25	9.00	OPTICAL DATA SYSTEMS INC.
OTC	7.50	3.13	PENRIL DATA COMM NETWORKS (L)
OTC	20.75	10.00	PICTURETEL CORP.
OTC	8.25	2.75	PROTEON INC.
OTC	14.38	3.38	RACOTEK INC. (L)
NYS	38.88	24.88	SCIENTIFIC ATLANTA INC.
NYS	47.00	36.75	SOUTHWESTERN BELL CORP.
NYS	40.25	31.38	SPRINT CORP.
OTC	26.75	13.38	STANDARD MICROSYSTEMS CORP.
OTC	30.75	11.50	STRATACOM INC. (H)
OTC	33.75	13.50	SYNOPTICS COMMUNICATIONS
OTC	15.25	3.63	TELEBIT CORP.
OTC	46.00	23.00	US ROBOTICS
NYS	50.75	38.25	US WEST INC.
OTC	43.88	18.75	WELLFLEET COMMUNICATIONS
OTC	28.25	12.75	XIRCOM
OTC	23.00	12.75	XYLOGICS INC.
OTC	30.00	11.25	XYPLEX INC.
PCs and Workstations			
OTC	7.50	2.63	ADVANCED LOGIC RESEARCH
OTC	38.50	22.00	APPLE COMPUTER INC.
OTC	33.00	12.50	AST RESEARCH INC.
NYS	39.88	15.38	COMPAQ COMPUTER CORP.
OTC	30.75	15.13	DELL COMPUTER CORP.
OTC	25.00	9.25	GATEWAY 2000 INC.
NYS	93.63	64.38	HEWLETT PACKARD CO.
NYS	26.88	16.00	SILICON GRAPHICS
OTC	31.38	18.25	SUN MICROSYSTEMS INC.
NYS	50.75	28.13	TANDY CORP.
OTC	5.13	2.38	ZEOS INTERNATIONAL LTD.
Large Systems			
ASE	7.88	4.38	AMDAHL CORP.
NYS	7.63	3.63	CONVEX COMPUTER
OTC	4.50	0.50	GRAY COMPUTER
NYS	33.75	19.13	CRAY RESEARCH INC.
NYS	10.75	6.63	DATA GENERAL CORP.
NYS	43.13	18.25	DIGITAL EQUIPMENT CORP.
OTC	6.38	2.38	ENCORE COMPUTER CORP.
NYS	52.25	38.63	HARRIS CORP.
NYS	65.00	40.63	IBM
OTC	18.75	7.75	NETFRAME
OTC	26.00	3.88	PARALLAN COMPUTER
OTC	23.25	5.38	PYRAMID TECHNOLOGY (L)
OTC	20.00	11.13	SEQUENT COMPUTER SYS.
NYS	6.84	1.75	SEQUOIA SYSTEMS INC.
NYS	33.63	20.25	STRATUS COMPUTER INC.
NYS	16.38	8.50	TANDEM COMPUTERS INC.
OTC	30.00	4.00	TRICORO SYSTEMS
NYS	16.50	8.63	UNISYS CORP.
Software			
OTC	34.50	16.25	AOOBE SYSTEMS INC.
OTC	34.50	16.25	ALOUS CORP.
OTC	8.38	4.38	AMERICAN SOFTWARE INC. (L)
OTC	15.75	6.75	ASK COMPUTER SYSTEMS
OTC	61.75	37.00	AUTOESKIN INC.
OTC	4.25	1.75	BACHMAN INFO. SYSTEMS (L)
OTC	33.00	20.50	8GS SYSTEMS INC.
OTC	71.00	40.50	BMC SOFTWARE INC.
OTC	30.75	22.50	BOOLE & BABBAGE
OTC	20.75	8.50	BORLAND INT'L INC.
OTC	25.00	6.75	BROCK CONTROL SYSTEMS INC.
OTC	4.63	2.38	CE SOFTWARE
ASE	30.34	6.25	CHEYENNE SOFTWARE INC.
OTC	14.25	7.38	COGNOS INC.
NYS	44.88	27.38	COMPUTER ASSOCIATES
NYS	5.38	2.13	COMPUTERVISION CORP.
OTC	48.25	21.00	COMPUPWARE CORP.
OTC	14.00	7.50	COMSHARE INC.
OTC	25.00	9.19	COREL CORP.
OTC	7.50	3.00	EASEL CORP.
OTC	29.25	11.50	FILENET CORP.
OTC	25.00	3.13	4TH DIMENSION
OTC	12.50	7.13	FRAME TECHNOLOGY
OTC	13.00	7.00	GROUP 1 SOFTWARE
OTC	31.75	6.75	GUPTA
OTC	12.00	5.88	HOGAN SYSTEMS INC.
OTC	29.50	16.00	IMRS
OTC	44.75	12.50	INFORMATION RESOURCES
OTC	24.50	14.25	INFORMIX CORP.
OTC	12.38	8.50	INTERGRAPH CORP.
OTC	8.75	2.88	INTERLEAF INC.
OTC	15.50	4.75	INTERSOLV INC.
OTC	50.00	27.00	INTUIT INC.
Services			
OTC	25.50	15.13	AMERICAN MGMT. SYSTEMS
NYS	4.25	2.63	ANACOMP INC. (L)
OTC			

PENTIUMTM MAXIMUS.



Sounds like the folks who test PCs for a living had to tighten their old safety belts when they tested our latest PentiumTM Processor OmniPlex systems. Besides calling it, "the best performing PC we've ever seen," PC Magazine said "on our benchmark tests, the OmniPlex was unmatched," and, "this EISA/PCI-based OmniPlex is truly an impressive machine."

We gave our OmniPlex both a PCI and a EISA bus, a 1GB SCSI II hard drive, and a PCI local bus video benchmarked at 50 million Winmarks.¹ To put it a bit differently, we squeezed every single available ounce of



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PowerPC

CONTINUED FROM PAGE 1

coming out next year," said Jim Hansell, vice president of investment systems at UBS Asset Management, Inc. "I don't see any of the big or small application companies coming out and suggesting you run it on anything other than a 486 or a Pentium, and until we do, [PowerPC] won't be a major consideration."

The hardware/software question is an issue because IBM is readying for mid-October the release of three PowerPC systems based on its PowerPC Reference Platform (Prep) specification.

Big-name U.S.-based vendors, including Zenith Data Systems and Motorola, Inc., are expected to ship systems compatible with the IBM-fostered Prep specification as early as September. Tatung Co. and several other Taiwanese manufacturers will deliver systems that support Prep in early fall [CW, June 6].

To bolster the positioning of the upcoming OS/2 for the PowerPC, IBM is expected this week to sign a deal for an authoring tool to boost application developers' efforts, sources said.

The authoring tool comes from Totally NonTechnical Solutions, a small start-up in Evanston, Ill., sources said. The deal with that company will give third-party application developers an easy way to voice-enable their applications, sources said.

Don't see dollar signs

Many application software developers, however, are still unsure about the financial opportunity PowerPC represents. Most are still laser-focused on the fat part of the market just to make a living. And that means Windows.

"I don't even see PowerPC in the game yet because it just doesn't matter to applications developers" focused on trying to compete with Microsoft Corp. in the Intel Corp.-compatible market, said Paul Grayson, chairman of Micrografx, Inc. in Richardson, Texas.

Grayson and other developers said once an installed base of PowerPC systems exists, it might make sense to develop for it.

But hardware developers taking a *Field of Dreams* approach may have a rude awakening



if they believe that once they build it, the software will come.

"So long as we can run off-the-shelf software and buy standard components for it, we don't care what architecture or processor a box is based on," said Victor Mutnick, corporate vice president at New York Life Insurance Co., referring to IBM's PowerPC plans. More than the availability of PowerPC-based software, his main concern is making sure he does not get shut out of the mainstream market, as he was with IBM's Micro Channel Architecture.

The fate of IBM's OS/2 is another subplot of the PowerPC hardware announcements. The first Prep-compliant systems will most likely favor Windows NT, with IBM's AIX Unix operating system as another option.

Windows NT for PowerPC will ship within 60 days of Windows NT 3.5, or in late November, according to Microsoft officials. Meanwhile, the ship date for OS/2 for PowerPC has now slipped into the first quarter of 1995, sources said. Because of this, IBM has reversed its earlier plans not to ship PowerPC hardware until OS/2 is available for it [CW, May 23] and will make Windows NT and AIX 4.1 available with these first machines, according to sources close to the company.

IBM is expected to announce a 1995 availability date for OS/2 when it announces its hardware.

Still, if NT gets too much of a head start in the market, OS/2 could end up sledding uphill once again.

"But I don't think NT shipping earlier than OS/2 kills OS/2 because NT still faces the same compatibility and scalability problems as OS/2," said Randell Flint, president of Sun Dial Systems, Inc. in Seal Beach, Calif.

Some corporate users said that while they will not be buying much in the way of PowerPC boxes for a while, the appearance of hardware — with or without software — is still welcomed.

"If you're a buyer, you watch people come out with the first thing, and if you have the budget maybe you try to evaluate it," said David Pinkard, a technical consultant at Mallinckrodt Medical, Inc. in St. Louis. "That technology may not mature for another year or two and become attractive price-wise for 12 months or so. But by the time it does, you learn a lot about it and so does the manufacturer."

Users would welcome Apple clones

With rumors swirling about Apple Computer, Inc.'s efforts to create a clone market for its technology, this much is certain: Users are looking forward to such a development.

Still, they worry about compatibility and cost of ownership issues.

Apple Executive Vice President Ian Diery said last week that the company remains intent on licensing its technology and is seeking agreements with vendors in markets. An Apple spokeswoman said the company has not yet signed any licensing agreements for the Macintosh operating system or for Power Macintosh technology.

Apple is also believed to still be working diligently with IBM to agree on a common design specification for PCs based on the PowerPC chip — the PowerPC Reference Plat-

form specification, also known as "Prep."

Users last week said it is important for Apple to reach design harmony with IBM because such a move would encourage potential licensees, who might otherwise balk at building an Apple system that will not conform to IBM specifications.

"The common spec is going to be one of the key factors that make a clone market happen. It would be real stupid to back off that," said Marc Kilgore, vice president of information services at the City and County Employees Credit Union in St. Paul, Minn.

Todd Nugent, IS director for the Chapman and Cutler law firm in Chicago, added that having alternative suppliers would also keep Macintosh hardware competitively priced.

—Mark Halper

Agents

CONTINUED FROM PAGE 1

services, he added, as well as a vehicle for sharing open-source intelligence with sister agencies such as the National Security Agency and the Defense Intelligence Agency.

Naturally, the spy agencies are keenly aware of the danger of security breaches from Internet hackers. Markowitz said they are installing a commercial-grade "firewall" — essentially a server with access-control software — to protect internal computer networks from Internet intrusions.

In addition, a special, undisclosed hardware device will allow analysts to transfer Internet files to their high-security workstations while preventing file transfers in the opposite direction, Markowitz said.

These days the Internet is getting crowded with investigators of all sorts. Many private-sector researchers already use the Internet to supplement their heavy-duty use of online vendors such as Dialog Information Services, Inc.

For example, John F. Quinn, a business intelligence professional in Vienna, Va., and former CIA analyst in Japan, recently used the Internet's Gopher navigation tool to collect information on foreign reaction to the death of North Korea's leader.

James Cook, a California-based business investigator, runs an Internet-based discussion group called InfoPro, where information professionals swap advice and establish far-flung contacts.

A darker downside

But using the Internet for intelligence has a downside. For example, queries posted on public news groups or mailing lists may alert the world to the research topic unless the query is artfully phrased.

"There is a danger of tipping your hand," Quinn said. "I use the Internet to contact a colleague [directly], but I am loathe to post something publicly."

Another problem is information overload and the urgent need to filter incoming Internet messages. "The information will be affordable and accessible, but electronic filtering hasn't progressed as far as we'd like," Markowitz said.

Furthermore, private-sector researchers warned there are no quality-control police on the Inter-

net. The danger of getting outdated or bad information is quite real.

On-line researcher Helen Burwell in Houston put it this way: "The Internet is a great big closet full of junk and treasures, so you have to go in there judiciously."

"You may get to know 100 to 500 new contacts, including ones in Italy and Russia, but the next question is how competent and reliable are they?" said Cook, a due diligence consultant for business investors. "You need to build a circle of trusted people."

Markowitz agreed that it takes a lot of mining to get a few nuggets from the Internet. "With open sources, there's lots more information available, but it has a poor signal-to-noise ratio," he said.

A big challenge is getting the clandestine service to accept

Watering holes in cyberspace

Intelligence analysts are likely to be poking around in these Internet nooks and crannies:

OPEN SOURCE INTELLIGENCE RESOURCES

Gopher: gopher.oss.net

"SOMALIA NEWS UPDATE" NEWSLETTER

Usenet newsgroup: alt.current-events.somalia

CHINA HEADLINE NEWS SERVICE

E-mail: info@asiainfo.com

REPORTS BY VOICE OF AMERICA CORRESPONDENTS

Gopher: gopher.voa.gov

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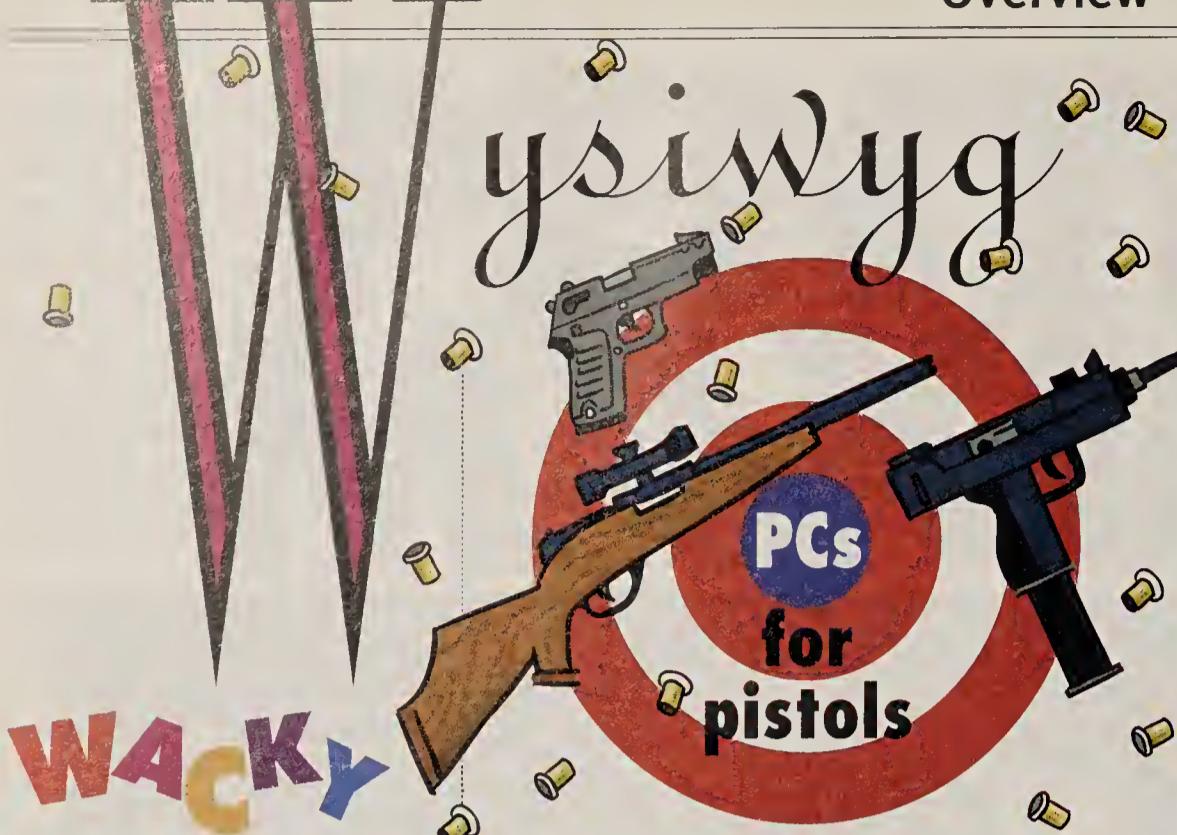
open-source intelligence as being valuable, Quinn said, because the spy culture figures that "if it's not secret, it's not worthwhile."

One reason for the new interest in on-line resources is they are low-risk and cheap when compared with billion-dollar spy satellites at a time of shrinking budgets. Further, the spy agencies are being asked to provide unclassified reports about more diverse topics, Markowitz said.

"The reality is that open sources are now superior in many cases to existing classified sources, such as in dealing with African crises, where the intelligence community has mediocre to nonexistent capabilities," said Robert D. Steele, president of Oakton, Va.-based Open Source Solutions, Inc., a non-profit organization that promotes the broader use of open-source intelligence.

"The creation of our office is a recognition that open sources are a valuable resource. As we draw back in some parts of the world, our office provides an information safety net," Markowitz said.

Check out all the hot things you can do on the Internet! See page 49.



WACKY

definitions

Acceptance testing

A lengthy and time-consuming process in which the job specification is gradually and completely altered to match the equipment supplied.

Array

A simple but powerful method of reducing available storage.

Cycle time

The time a program takes to give you exactly the same errors you started with.

Direct access

A method of reading or writing the wrong piece of data at high speed.

Maintenance

A programming method in which development work is carried out by the programmer's children and their children's children.

Source: High Tech Joke Book (Oak Ridge Public Relations, Inc.)

Great Names

Arthur J. Data

Vice president, information systems
Navistar International, Chicago

WYSIWYG COMPILED BY LORY DIX.
ILLUSTRATION AND DESIGN BY DAVE MARSHALL

The East West Foundation, a Boston-based nonprofit charity chartered to recycle computer equipment for educational purposes, is looking for co-sponsors for the development of a trial project to trade computers for guns. The foundation's idea is to offer computer systems to schools where students turn in their guns. The possible trade-in formula might work as follows:

Trade in this:	Get this computer:
Handgun, pistol	XT system with printer
Shotgun, rifle	AT system with modem and printer
Automatic weapon	Desktop publishing system

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Inside Lines

Keep on clicking, officer...

You may recall reports about pacemakers and electric wheelchairs going haywire due to radio interference [CW, June 20]. Well, here comes a report from the Netherlands, where a 42-year-old man from The Hague collapsed when his pacemaker failed. A policeman in the vicinity radioed for help, and as soon as he did, the pacemaker started working again. The officer, by using his transceiver, was able to keep the man alive until an ambulance arrived.

Cisco router-support monopoly ending

Both IBM's NetView/6000 and Hewlett-Packard's OpenView will shortly get their long-overdue support for Cisco's Ciscoworks, starting with an HP product introduction next week. This is a blow to Sun Microsystems, whose SunNet Manager product was—until now—the only Unix-based platform to manage Cisco routers. Indeed, a monopoly on Ciscoworks, primarily due to Cisco programmers' partiality to Sun workstations, is the main reason SunNet Manager still has the biggest market share, analysts said.

Yo, Philippe! You listening?

Although Borland Chief Executive Officer Philippe Kahn had plenty to say during a three-hour amicable jousting match with fellow object bigots such as Next's Steve Jobs and Taligent's Joe Guglielmi at Object World last week, Kahn didn't seem to be paying much attention. While Jobs and Guglielmi made their speeches, Kahn sat on stage, slouched over his portable, typing away. He'd look up from time to time, whisper to SunSoft's Bud Tribble and then go back to fiddling with his laptop. Nice manners, big guy.

IBM offices go mobile

Since early 1982, IBM's 12,000-strong field sales force has used Motorola's wireless data terminal, the KDT, or "brick," to communicate over what is now the ARDIS nationwide packet radio network. But IBM sources confirmed last week that by next April about half the force will replace this device with an IBM-manufactured PCMCIA card for their laptops that supports the ARDIS wireless protocol. The wireless-enabled laptops are the foundation of a broader mobile office strategy within IBM, the sources said.

Hey soldier, what's that in your pocket?

The Soldier's Computer will get its marching orders next week. Once a research project commissioned by the U.S. Army, the system is finally off the drawing board, according to sources close to Texas Microsystems. Originally planned as a 1-pound, cigarette-pack-size wireless communicator with a built-in global positioning system, it is now closer in size to Apple's Newton. It has a touch-screen interface and two PCMCIA slots, and Texas Microsystems expects to bring the product to the commercial market eventually, the sources said.

"HP...PA...NT...Hike"

HP has yet to port Microsoft's Windows NT to its PA-RISC architecture, but users seem keen on the notion. A daylong session on NT has popped up on the Sept. 18 agenda at the Interex HP users' conference in Denver. HP set the stage for an NT port when it developed a "biendian" version of its PA-RISC chip late last year [CW, Dec. 13, 1993]. It has said it will offer NT on PA-RISC once the market demands it.

"City hall on the info superhighway" bragged a headline last week in The Boston Globe about the city of Newton, Mass., and its new "high-tech" gear. But it turns out that all those wild cybersurfers in Newton are up to is a tone-directed telephone system and an automated teller machine for making tax payments. Talk about stretching the superhighway cliche to the breaking point. . . . But if you'd like to motor along Computerworld's own infohighway, call in with news items or tips to our 24-hour voice-mail tip line at (508) 820-8555 or our toll-free number at (800) 343-6474. News Editor Maryfran Johnson can be reached by phone at (508) 820-8179, via the Internet at mjohnson@cw.com or through MCI Mail at 590-8017.

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